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SANITARY CONDITIONS AT KEY WEST

Water Supply from Cisterns or Distilled Sea Water—Sewers Difficult to Construct and to Maintain—Method of Disposing of Domestic Wastes—Death Rate Remarkably Low

BY JAMES NISBET HAZLEHURST.

THE recent celebration of the completion of the "Over-sea" railway, connecting the mainland through the Florida Keys to Key West, the southernmost city of the United States, and the plans for the future which the promoters of this great enterprise have announced have drawn especial attention to the city of Key West. Besides these projects which the railway officials have in mind, Key West is itself anticipating the general prosperity which is to follow the consummation of this great undertaking by paving its streets, for which purpose nearly a half million dollars will be expended, the writer being retained to supervise this work.

According to the latest census reports, the population of Key West is 19,945, a very considerable number of which is represented by the Cuban, negro or mixed elements, largely engaged in the manufacture of cigars. From a police census recently taken, the population of Key West has been estimated at 25,000, but perhaps an average of the government and local figures would more nearly represent the fact.

WATER SUPPLY.

In this respect Key West is most unfortunate, since every drop of water used for domestic, commercial or manufacturing purposes is derived from cisterns, supplied by the annual rainfall, or is distilled from sea water. Several deep wells, one of which penetrated some 2,000 feet, afforded only a brackish water.

The annual rain-fall, from which the majority of the water for domestic purposes is obtained, amounts to a mean total of only 38.26 inches; the greatest rain-fall occurring in September, 6.49 inches, and the minimum in

April, 1.20 inches. As in most tropical and semi-tropical localities, the year is divided into the dry and rainy seasons.

Once or twice conditions in Key West have become critical owing to the depletion of the cisterns from lack of rain; and on one occasion tank steamers were ordered posthaste to Havana for an additional water supply, but fortunately rain relieved the situation about the time the first vessel was sighted in the offing.

GEOLOGICAL CONDITIONS

According to Agassiz, the Keys, the southern coast and the peninsula, certainly as far north as the north shore of the everglades, and probably on the east side as far north as St. Augustine, have been formed by coral agency, the corals having built upon an extensive submarine bank, produced by some other process.

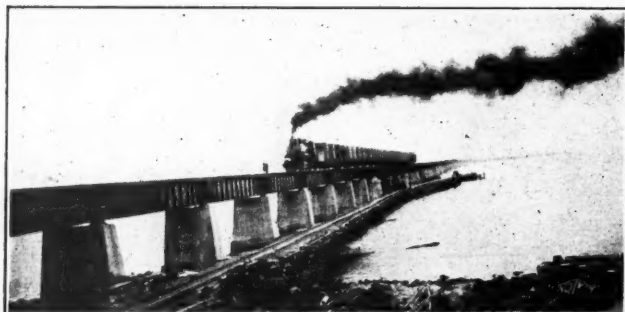
This formation certainly extends as far north as Homestead, one of the later stations of the Florida East Coast Railway, at which point artesian wells have been found to have the same characteristics as those so well known on the east coast of Florida further north.

Of surface water, the everglades, an extensive fresh water swamp only a few feet above the sea level, furnish the nearest source of supply; and in its construction across the Keys the East

Coast Railway Company utilized tank cars, filling them at a pumping station known as "Everglades," some 69 miles north of Key West. This water, however, can hardly be relied upon at all seasons of the year as a source of supply, since during the spring tides the lake water becomes brackish from the sea flowing through numerous inlets.



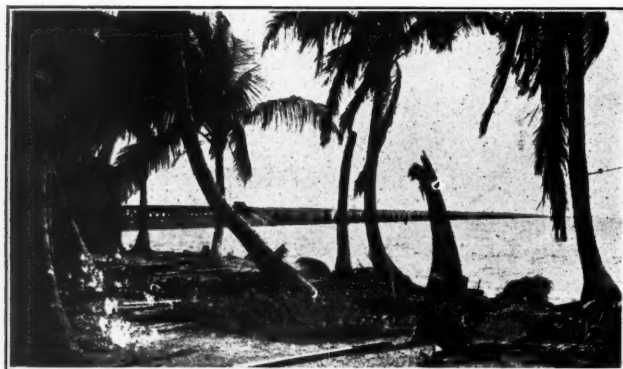
STREETS ABOUT TO BE PAVED.



WATER TRAIN CROSSING VIADUCT EN ROUTE TO KEY WEST.

To the south of the Keys the bottom slopes rapidly to the almost unfathomable depths of the Gulf Stream, and across this channel it is idle to hope for a supply of subterranean fresh water. This conclusion the writer reported to the Board of Public Works, after investigation of the possibilities of bringing fresh water to Key West. Estimates made at that time for works to cost exceeding one million dollars were predicated upon high pressure mains and relay stations 40 miles apart, with machinery calculated to handle one million gallons of water, with 1,600 pounds initial pressure. Provision was made strictly for domestic and manufacturing uses, allowing 20 gallons per capita for a strictly metered fresh water supply, the street flushing, fire protection, etc., to be supplied, as at present, by an independent system of salt water. It was assumed that the one million gallons would provide for a population over double that of the present time.

Naturally, the only possible location for duplicate pipe lines would be along the right-of-way of the Florida East Coast Railway, including its bridges and viaducts connecting the Keys. From this necessity, as well as the fact that, unaided, the city would be unable to provide the funds for the construction of such a costly system of waterworks, the only possible hope would be that the necessities of the railway company, and its indirect interest in the growth of Key West, would eventually force it to co-operate with the city towards the end of obtaining an adequate fresh water supply.



ONE OF THE VIADUCTS OVER WHICH PIPE LINE WOULD BE LAID.

PROPOSED SEWER SYSTEM

The island of Key West is $4\frac{1}{2}$ miles long by about one mile wide, upon which the town settled in 1822, building on the highest points, the maximum height above the sea being only fourteen feet; but the reefs surrounding it protect it against even tropical hurricanes, which have in the last few years been very unwelcome visitors. The soil is very scanty, although affording remarkably luxuriant vegetation under the circumstances, and lies directly upon the coral rock, through which brackish water filters where cuts are made below tide level.

Several plans for sewers have been made in time past, but owing to the very considerable expense of construc-

tion, due to the solid rock excavation, the ground water to be encountered, and the necessity of pumping and flushing, action in this direction has been deferred to this time.

The surface water, or rain-fall run-off, follows the path of least resistance until it overflows into the sea or is conducted by partly open and partly covered drains, which are quarried out of the soft virgin stone, a cross-cut saw being used to block out the excavation, the slab so formed being used afterwards as a cover-plate in some instances.

UNUSUAL SANITARY CONDITIONS

With the exception of one or two public buildings, there is not a single foot of sanitary sewer on the island, but the domestic wastes are discharged directly into cess-pools, also sawed from the rock, over which are built open closets. The contents of these vaults are removed as occasion requires, under the direction of the city Health Department, the property owner paying the cost of removal and disinfection. As collected, the excremental matter is placed into sealed sanitary casks, with a capacity of about $4\frac{1}{2}$ cubic feet each, and is carted to the



SANITARY DEPARTMENT SCHOONER.

city wharf, at the foot of one of the streets, and there loaded on a schooner, the property of the city, as shown in the accompanying photographs. When the capacity of the schooner has been reached, it sails for open water and discharges its cargo on the outgoing tide.

The total expense of operating for the past fiscal year was \$3,703.80, with revenue secured (from a charge of 30 cents per barrel for matter removed from each closet), which amounted to \$2,370, leaving an expense of \$1,333.80, to be provided from the city budget.

During the year 7,900 barrels of this night soil were removed by the department, amounting to 33,180 gallons; which, upon the basis of the estimated population, gives the small amount of $1\frac{1}{2}$ gallons per capita as having been removed in this way, and this would amount to perhaps not more than 12 pounds for each person for the year. This is not an abnormal condition there, but represents a fair average.

Assuming that under ordinary conditions 77 grams of organic volatile matter is a fair allowance upon a per capita basis for American sewage, if this entire amount had to be handled for each person upon the island there would be 57.43 pounds per annum, whereas, as shown, only 12 pounds was actually removed on an average; hence 79.2 per cent. has been destroyed by natural processes. By inquiry, it is ascertained that vaults in the higher section of the town have not been cleaned for 20 years or more, and in some cases there is no record that the excremental matter has ever been removed; but in the lower section of the city, where the vaults are nearly always filled with seepage water, these vaults frequently overflow and require attention.

It is a reasonable assumption that in the higher levels

the liquid matter leaches out into the soft coral stone and disappears, leaving the solid organic matter also to pass away, presumably by bacterial action.

The domestic waste from sinks and other household sources are also generally discharged into these cesspools.

GENERAL AND COMPARATIVE MORTALITY

According to the mortuary reports collected by the Public Health and Marine Hospital Service for the port of Key West, the following is an official summary for the past five years:

DEATHS (EXCLUSIVE OF STILL-BIRTHS).

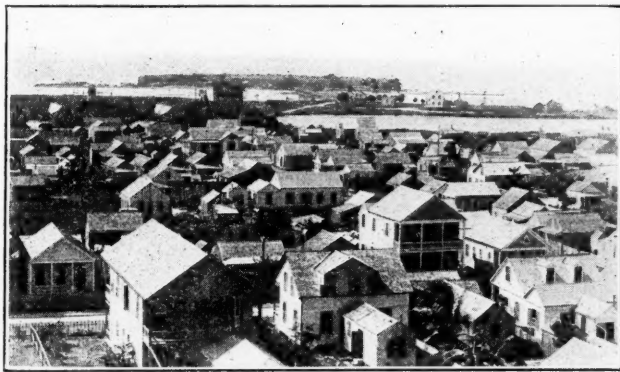
| 1907 | 1908 | 1909 | 1910 | 1911 | 1912 |
|------|------|------|------|------|------|
| 496 | 417 | 390 | 463 | 462 | |

For the purpose of comparison, and taking at random Atlanta, Georgia, generally regarded as exceptionally located from a hygienic standpoint, and reducing the figures to deaths per 1,000 population:

DEATHS PER 1,000 OF POPULATION.

| City | Pop. | 1907 | 1908 | 1909 | 1910 | 1911 |
|---------------|---------|------|------|------|------|------|
| Key West..... | 22,500 | 22.6 | 18.5 | 17.3 | 20.6 | 20.5 |
| Atlanta | 154,839 | 21.4 | 18.1 | 17.2 | 18.9 | 18.7 |

The comparison is remarkable considering all things.



TYPICAL SECTION OF KEY WEST.

From the accepted teachings of sanitary science, it is strange that this semi-tropical city, with none of the modern improvements and conveniences such as pavements, storm or sanitary sewers, or even a fresh water supply, and with its natural tendencies toward malaria, yellow fever and like diseases, could ever have survived; instead of which we find it ranking well along with cities of the first class from a sanitary standpoint.

It is suggested as a probable explanation that the mild and equable climate, recording a mean of 76.9 degrees F. during 82 years, the balmy sea breezes, the gentle slope of the city on all sides to the sea, the lack of luxuriant and dank vegetation, the absence of fresh water ponds as breeding places for the mosquito, the porous quality of the coral stone, and perhaps the inherited immunity (if admitted) of the Cuban population in the matter of susceptibility to tropical fevers, all contribute to these remarkable health conditions.

In view of the low comparative cost of the removal of what remains of the domestic waste matter, the fact that there are no wells to be polluted by leaching cesspools and the enormous cost of installing an adequate sewer system, it is at least a debatable question, except as a matter of comfort and convenience, if it is really worth while ever to install sewers in this farthest south city, since the evidence points to a remarkably low morbidity at present, which could even be reduced with a fresh water supply, a more rigid inspection, and insistence upon screening and disinfection, and a more immediate attention to other sanitary necessities, all of which could easily be accomplished by the annual expenditure of only a part of the interest that might be saved from the capitalized cost of sewer construction.

STREET CLEANING DEPARTMENT

Methods of Chicago Bureau of Streets and Recommendations for Changes—Districting City and Systematizing Work

THE Chicago Commission on City Expenditures, during its life of about 1½ years which terminated in April, 1911, secured from Richard T. Fox a report upon the Bureau of Streets of that city and recommendations of improved methods, which are of more than local interest. This report has just been published by the Chicago Bureau of Public Efficiency.

The report, which was based upon the observations of several investigators who followed a number of the ash, garbage and rubbish collecting carts and carefully noted and timed the various operations, would apparently indicate that the supervision of the Bureau was probably as good as could be expected under the organization then existing and the incubus of political control of labor and team hire which was found to exist. After making a liberal allowance it appeared that at least 10 to 15 per cent. of the time of both men and teams was deliberately wasted, and that consequently the number of both laborers and teams might be reduced by that percentage. The general system of supervision and inspection also seemed to have been designed to give an unnecessary number of positions to political favorites. Unfortunately these conditions are found to a greater or less extent in the departments of almost every city, small as well as large, but are, we believe, steadily improving. This change for the better can be assisted to some extent by change in the organization of the department; but little real improvement can be obtained unless the head of the department is permitted to retain and promote men only upon the basis of the efficiency of the services rendered.

In studying the matter of street cleaning it was believed that the amount of work which each sweeper could be expected to do was affected by the following conditions:

The kind of pavement cleaned. Whether a pavement is smooth like asphalt or creosoted block and rough like granite or brick, of course, affects materially the area a man can keep clean.

The condition of the pavement. It is naturally much easier to clean an even surface than one full of holes and depressions.

The number of horses passing either way along the street. This was obtained by actual count during the observation of the sweeper and was taken for a period of eight hours. The fact that between 80 and 85 per cent. of the dirt appearing on a well paved area of streets is horse manure emphasizes the importance of this factor in the cost of street cleaning.

Proximity to unpaved streets and alleys.

The time at which work was begun—time left for lunch, time returned from lunch—and time left for the day.

The number of push cart or barrow loads of dirt collected and their disposition.

The character of the work done, noted as good, fair, poor.

As an illustration of the first of these it was estimated that "the substitution of creosoted blocks for the impossible granite pavements in the downtown streets, where the cost of cleaning is greatest, has effected a saving of from 30 per cent. to 40 per cent. in the labor cost" (of street cleaning). (These conditions should also, it would seem, be considered as important elements in any system of cost accounting of street cleaning which may be devised.)

Mr. Fox's general ideas and recommendations concerning the operation of a street department or bureau are quite well indicated by the following quotations from his report:

"The first thing one would naturally do if confronted with the problem of cleaning these miles of streets and removing the street dirt and household accumulations of garbage, ashes and miscellaneous waste, would be not to deal with the ward as a whole but to divide it into smaller

areas—we will say, for example, into five sections of seven miles each—provided the conditions in all parts of the ward are the same. The unit of work would then be sufficiently small to enable one man to handle it intelligently and effectively. In charge of this unit would be placed a foreman who would have supervision of work of every kind in his section and he would be held responsible for conditions therein at all times.

"The foreman in turn would divide his seven miles of streets into individual sweeping and wagon routes—the sweeping routes laid out with reference to the kind of pavement, condition of pavement, amount of traffic, etc., and the wagon routes with reference to time of getting loads, length of haul, etc., so that as near as possible the men would have corresponding amounts of work. The limits of these routes would be carefully established in order that each man and teamster would know exactly what he had to do and for what he would be held responsible. Under this method each sweeper and teamster has a definite amount of work assigned to him and an inspection by the foreman at the close of each day's work would show how well it had been done. The ward superintendent would also inspect with reference to the work of the foreman as well as the laborers. A reference map showing each individual sweeping and wagon route would be kept in the superintendent's office, from which he could on occasion locate or check up the route of any man or team.

"For purposes of identification and as an aid to discipline the men, including the foremen, would be uniformed and each would wear a numbered badge.

"Daily reports showing work of each man and team and detailing the streets cleaned and quantities of refuse hauled would be sent each night by the foreman to the ward superintendent and forwarded by him with his own report to the main office.

"With this close supervision of the work of each individual there could be no shirking without detection, and a sweeper or teamster could, by comparing his task with that of others, establish the fact if he were being imposed upon by the foreman. It would be impossible without the connivance of the superintendent and foreman for any man to receive pay for work he did not perform.

RECOMMENDATIONS.

"For the purpose of fixing responsibility and equalizing the duties of the employes, the area covered by the bureau, which includes the entire city, should be separated into three divisions, the divisions into districts—to take the place of the present ward divisions—the districts into sections and the sections into individual sweeping and carting routes.

"The head of a division, to be known as a division superintendent, will be responsible to the superintendent of streets for the work in his division; the head of a district, to be known as a district superintendent in place of ward superintendent (which title is to be abolished), will be accountable to his division superintendent for the conduct of the work in his district. The head of a section, to be known as a section foreman (which position is to be created), will be responsible to his district superintendent for the work of the men and teams in his immediate charge and for the condition of the streets and alleys in his section.

"The section foremen will make daily written reports of the number of men and teams at work, where each was employed and amount of work done by each—in the case of sweepers, the names of streets swept, square yardage, and where possible, the cubic feet of street dirt collected—in case of wagons, the streets or alleys cleaned, yardage or weight of material removed and disposition thereof.

"To simplify his report and avoid duplication of work

the foreman may make out a schedule or plat showing the assignment of men working on the block system, and instead of writing out the name of each man and a list of the streets he swept, the foreman can refer to the schedule or plat by number and it will be understood that each sweeper cleaned the area of streets which the schedule or plat indicates that he cleaned. Any change in the schedule must be noted. If an inspection should show that the actual assignment of men on the streets did not agree with the schedule, and such changes are not noted on the foreman's report, he should be held accountable for the making of a false report. The routes of the teams can also be scheduled or platted and record made on the foreman's daily report, as in the case of the sweepers.

"These reports to be presented each night to the district superintendent, who will check and indorse them and forward them with his own report, which will be a summary of the reports of the section foremen, covering his district, to the superintendent of his division. The division superintendent will in turn check both reports against his own information, and in the case of the teams against the reports of the inspectors at the dumps and loading stations (which will be made direct to the division superintendent), and deliver them to the superintendent of streets for his inspection and later for entry on the records and filing.

"The area embraced in each district to be based on a study of the density of population, mileage of streets, etc., so that there will be as nearly as possible an equal division of the work among the district superintendents.

"Encouragement should be given those employes who give satisfaction in their work. There are several ways this can be done. By rewards of cash or of a certain number of days' vacation with pay, or by paying a man or team in proportion to what he or it can do. In the case of a sweeper, for instance, a reasonable day's work, under certain conditions, is the thorough cleaning of a specified number of yards of pavement. This is the standard. Any man who can and will perform this task receives say \$2 per day. A man who thinks this too much, but is willing to do say 80 per cent. of such work, receives \$1.60 per day, and so on. A man who fails on the standard route is dropped to one he can take care of, and a man who improves in his work is given more work and more pay in proportion to the improvement made.

"All these plans have proven successful in private work and in public work, where the conduct of the work was not interfered with from outside sources, but under a system where supervision is so lax that the employes are not even kept on their work the full eight hours, the introduction of any of these plans would hardly be practical.

"The officials of the bureau must be given absolute charge and held to a strict accountability for their shortcomings before proper discipline can be obtained and the bureau work put on a basis that approaches efficiency."

UTILIZING SLUDGE IN BRADFORD, ENGLAND

FURTHER information has reached us concerning the utilization of sewage sludge in England, facts concerning which have been given by us in two or three recent issues of MUNICIPAL JOURNAL. It is reported that at Bradford last year there was a profit of \$150,000 by the sale of recovered grease, and it is anticipated that when the new works at Esholt have been going for twelve months this gain will be raised to at least \$250,000. Then there is a valuable residuum in the form of pressed cake that shows excellent results when used as a fertilizer. France, South America, and other foreign countries have been large buyers of this manure, the easily transportable qualities of which have been an additional recommendation, while the price is so reasonable on a profit-yielding basis that it has been used as fuel in local factories during the coal strike. New machinery which has been provided will be started in

a few days. It has been installed at a cost of \$300,000, and the plant is the result of ten years' experiment by the city sewerage chemist and engineer, Mr. J. Garfield. He first installed two presses, which yielded \$1,080 in grease sales. Now there are 64 presses at work at the Frizinghall works. When the new works at Esholt are complete there will be more than a hundred presses going. The population of Bradford is about 290,000.

WATER WASTE IN ALBANY

Maximum Winter and Summer Consumption—Financial and Other Advantages of Stopping Waste—Recommendation of Superintendent

DURING the fiscal year of 1910-1911 the consumption of water in the city of Albany, N. Y., increased from 223 gallons per capita per day, the record of the previous year, to 242 gallons; and this was an increase of 44 gallons over the consumption for 1908-1909. In the report for the last fiscal year the superintendent of the water bureau gives the rates of consumption for each month of that year, and in addition gives the rates for each day of January and June. Concerning these, and the matter of water waste in general in the city, the report continues as follows:

The record for January is typical of a winter month and shows the relation between consumption and temperature. On Monday, January 3, when the minimum temperature was 27 degrees Fahrenheit, the consumption was 22.4 million gallons. On January 5, after one day with the minimum temperature approaching zero Fahrenheit, the consumption was 23.9 million gallons. On Saturday, January 15, the consumption was 21.9 million gallons, and as Sunday is the day of normal minimum consumption for the week, the consumption for the following day should be less than this figure; but with a fall in temperature to one degree above zero the consumption increased on Sunday, January 16, 2.6 million gallons, and, with the continued cold, rose to a maximum, on Tuesday, January 18, of 26.1 million gallons, an increase over the preceding Saturday of 4.2 million gallons.

This is waste and purposeful waste; it is waste by the individual in order to keep plumbing fixtures from freezing, in order to save for himself at the expense of the city at large.

On Tuesday, March 29, 1911, the date of the Capitol fire, the consumption of water was 24.4 million gallons, an excess over the preceding day of 2.3 million gallons, and an excess over the preceding Tuesday of 2.8 million gallons. It is thus seen that a zero day costs the city of Al-

bany more in water than the greatest fire which has occurred in many years.

The accompanying table shows that other cities as clean and as healthful as Albany, and some of them having a greater number of manufactories, do not find it needful to throw away so valuable a necessity of life.

The consumption and waste of water by the city of Albany is greater than that of any other city of its size in the United States.

The excessive consumption is objectionable in many ways. Our water is pumped and settled, filtered twice and pumped again; and to supply the water wasted costs the taxpayers in coal alone \$13,000 a year. The necessity for operating continually additional pumps requires more men, more coal, more oil, more packing and supplies, increases the wear on machinery and so the cost of maintenance. With a consumption of 150 gallons per capita, \$17,000 a year could be saved in the pumping department alone; and, if the experience of other cities is a criterion, the waste can be stopped and the consumption can be reduced to that figure by placing a meter on every water service.

In 1902 Cleveland, Ohio, with 27.2 per cent. of the consumption metered, consumed 165 gallons per capita. In 1910, with 78.4 per cent. of the consumption metered, the consumption was 102 gallons per capita. A like percentage of reduction in this city would make the consumption 150 gallons per capita per day.

The following table shows the reduction in three years in the metropolitan water district:

| City or town | Population | Per capita consumption (gallons) | Reduction in three years | Equivalent saving in gallons per day | Meters in use Jan. 1, 1907 | Meters in use Jan. 1, 1910 |
|--------------|------------|----------------------------------|--------------------------|--------------------------------------|----------------------------|----------------------------|
| Boston | 674,400 | 157 | 130 | 27 | 18,208,800 | 5,090 |
| Medford | 23,330 | 105 | 61 | 44 | 1,026,520 | 449 |
| Melrose | 15,790 | 118 | 64 | 54 | 852,660 | 132 |
| Winthrop | 10,290 | 117 | 63 | 54 | 555,660 | 45 |
| Totals | 723,810 | | | | 20,643,640 | 5,716 |

There are now in this city 17,593 services, of which 4,630 are metered. To meter 12,963 services at \$16 each would cost \$207,408. Interest on this amount at 4 per cent. is \$8,296.32 per year. The cost of maintaining 12,963 additional meters at 10 cents per year each would be \$1,296.30. Depreciation on \$104,000 worth of meters at 5 per cent. per year would be \$5,200. Cost of one additional clerk and two additional meter readers, \$2,580 per year—a total yearly charge for completing the metering of the city of \$17,372.62.

In other words, the money saved by not having to pump water to be wasted will pay for metering all unmetered services, and the city will in addition gain in greater pressure for fire fighting, in greater reserve capacity in case of a conflagration, in lower rates of operation of the filtration plant and greater safety from disease; and lastly, no extra construction expense would need to be incurred for many years, as the water supply to-day is abundantly sufficient for a city of 200,000 people.

Should the waste not be stopped and continue to increase at the same rate as for the year past, in two years the maximum daily consumption would exceed the maximum capacity of the filter plant.

The limiting portion of the system is the four-foot steel conduit which carries the water by gravity from the filtration plant to the central station. The limit of this conduit was reached on January 19, 1911, when its maximum delivery was found to be 26.5 million gallons per day. On January 18, 1911, with the temperature five degrees above zero and the filtration plant delivering to its capacity, it was impossible to keep up with the rate of consumption and the reservoirs lost a total of 1,919,000 gallons.

As the limit of the system has already been reached on one day; as curtailing waste will be a hardship to none;

TABLE SHOWING THE CONSUMPTION OF WATER IN THE CITIES NAMED.

| Year | City | Population | Consumption per day, gallons | Consumption per capita per day, gallons | Per-centage of services metered |
|------|---------------------|------------|------------------------------|---|---------------------------------|
| 1910 | Cleveland, Ohio | 604,000 | 61,502,000 | 102 | 97 |
| 1910 | Providence, R. I. | 246,000 | 15,572,000 | 63 | 89 |
| 1910 | Worcester, Mass. | 150,800 | 10,679,000 | 71 | 95 |
| 1910 | Lowell, Mass. | 106,000 | 5,443,000 | 51 | 79 |
| 1910 | Cambridge, Mass. | 104,800 | 10,396,000 | 99 | 30 |
| 1911 | Albany, N. Y. | 100,800 | 24,362,000 | 242 | 26 |
| 1910 | Hartford, Conn. | 99,000 | 7,708,000 | 78 | 99 |
| 1910 | Lynn, Mass. | 98,500 | 7,027,000 | 71 | 41 |
| 1910 | Springfield, Mass. | 88,900 | 10,589,000 | 119 | 61 |
| 1911 | Yonkers, N. Y. | 79,800 | 8,441,000 | 106 | 100 |
| 1910 | Somerville, Mass. | 77,000 | 6,190,000 | 80 | 48 |
| 1908 | Grand Rapids, Mich. | 75,000 | 14,729,000 | 196 | 34 |
| 1910 | Erie, Pa. | 66,500 | 13,784,000 | 207 | 3 |
| 1910 | Brockton, Mass. | 66,000 | 2,394,000 | 36 | 99 |
| 1910 | Woonsocket, R. I. | 38,100 | 1,409,000 | 37 | 87 |
| 1910 | East Orange, N. J. | 34,700 | 3,165,000 | 91 | 18 |

as large benefits are to be derived from a decreased consumption; as meters can be placed for nothing, since the saving by their use will pay their cost; in order to obviate a large and unnecessary future expense for an extension of the system; and, in a word, as the only reasonable and final solution of the water problem of this city, I recommend that \$210,000 be appropriated for the purpose of completing the metering of all service pipes.

COST OF HEALTH INSPECTION

THE Pittsburgh Civic Commission has made public the statistics collected by its Committee on Municipal Research concerning the cost of health inspection in five cities—Pittsburgh, Cleveland, Chicago, Detroit and Cincinnati. These show that during the year 1910 the following sums were spent in salaries: For tenement inspection—Pittsburgh, \$17,500; Detroit, \$900; Cincinnati, \$2,800 (Cleveland and Chicago did not keep separate records of this cost). For plumbing inspection—Pittsburgh, \$22,489; Cleveland, \$35,450; Detroit, \$6,480; Cincinnati, \$2,200. For sanitary inspection—Pittsburgh, \$32,847; Cleveland, \$10,367; Cincinnati, \$15,848. In Cleveland sanitary inspection is done by the policeman. The total costs were as follows: Pittsburgh, \$72,837; Cleveland, \$45,817; Chicago, \$102,005; Detroit, \$7,380; Cincinnati, \$25,848. The populations in 1910 were: Pittsburgh, 533,905; Cleveland, 560,663; Chicago, 2,185,283; Detroit, 456,766; and Cincinnati, 364,463.

For food inspection during 1910 these five cities spent as salaries the following sums: Pittsburgh, \$17,349; Detroit, \$5,400; Chicago, \$51,250; Cincinnati, \$13,730; Cleveland,

\$28,492. Except Chicago, these cities do not differ greatly in population. Pittsburgh and Cleveland were practically the same size, Detroit was 18 per cent. smaller and Cincinnati 35 per cent. smaller.

FIRE DEPARTMENT RECORD CARD

THROUGH the courtesy of Leonhard Felix Fuld, examiner for the New York Civil Service Commission, we have received a copy of the new record card of the New York Fire Department, which seems to be an excellent one and may give valuable points to departments in other cities. Mr. Fuld has had this filled out with the personal record of the present chief of the department in order to further illustrate how the card is used. Concerning this form, Mr. Fuld says: "I have examined the record cards at present in use in the police and fire departments of the principal American and European cities and can say without qualification that this card, which was prepared by a civilian clerk, Thos. Aram, under the direction of John Kenlon, chief of the department, is undoubtedly the best.

"Its principal superior quality is that it presents in compact form on the face of a simple card the entire official record of a member of the force from the time he enters the department until he leaves. On the first three lines is entered, by means of the typewriter, such personal and official details concerning the man as are of minor importance. The details of transfers, details, charges, roll of merit awards, and remarks which are of great importance in promotion examinations are entered with pen and ink by the record clerk to avoid the possibility of the records being changed or altered by an unauthorized person."

| | | | | | | | |
|----------------------|--|---------|--|------------------------------|--|---------------------------------|--|
| NAME KENLON, JOHN | | ADDRESS | | CO. NO. Engine Company 24 | | DATE APPOINTED Mar. 3, 1887. | |
|----------------------|--|---------|--|------------------------------|--|---------------------------------|--|

| UNION'D | 4th GRADE | 3rd GRADE | 2nd GRADE | 1st GRADE | WHEN APPOINTED | | | FORMER OCCUPATION | DATE AND PLACE OF BIRTH | M | S | COMPLEXION |
|----------|-----------|-----------|-----------|-----------|----------------|--------|--------|-------------------|-----------------------------|---|---|------------|
| Mar 3-87 | | Apr 2-87 | Apr 2-88 | Apr 2-89 | AGE | HEIGHT | WEIGHT | Rigger | Jan. 16th, 1860 Ireland. | | S | Dark |

| ENG'R OF STEAMER | ASS'T FOREMAN | FOREMAN | CH. OF BATTALION | DEP. CHIEF | WHEN RETIRED | WHEN DISMISSED | BADGE NUMBER | SCHOOL OF INSTRUCTION | | |
|------------------|---------------|----------|------------------|------------|--------------|----------------|--------------|-----------------------|----------|----------|
| Sep 1-92 | Dec 31-97 | Apr 1-00 | Dec 16-03 | May 1-09 | | RESIGNED | | ENTERED | LEFT | ELIGIBLE |
| | | | | | | | | Mar 14-87 | May 5-87 | E or H |

| TRANSFERS | | | CHARGES | | | ROLL OF MERIT | | |
|--------------------------|--------|---------|---------|---------------|-------|---------------|--|--|
| DATE | NATURE | PENALTY | DATE | DATE OF AWARD | CLASS | | | |
| to 26 Sept. 1-1892 | | | | July 28-1896 | P.R. | | | |
| to 24 June 15-1893 | | | | Dec. 27-1898 | P.R. | | | |
| to 13 May 7-1896 | | | | July 16-1910 | I | | | |
| to 29 Dec. 31-1897 | | | | | | | | |
| to 13 May 5-1899 | | | | | | | | |
| to 72 July 1-1902 | | | | | | | | |
| 2nd Batt Dec. 16-1903 | | | | | | | | |
| 6th Batt Jan 1-1904 | | | | | | | | |
| 19th Batt Jan 16-1904 | | | | | | | | |
| Marine Det May 1-1909 | | | | | | | | |
| Chief of Dept Aug 1-1911 | | | | | | | | |

| DETAIL | | | REMARKS | | |
|------------|---------------------------------------|-------------|--|--|--|
| DATE | NATURE | CANCELLED | | | |
| May 4-1899 | Supervising Engineer | July 1-1901 | Jan 1-1911 Organization of Fire College. In charge of Officers' School and Engineers' School. Instructor in General Fire Fighting and in Marine Fires. | | |
| May 4-1899 | Designated member | | Aug 1-1911 President Fire College Board. | | |
| | Examining Board of Engineers. | | | | |
| Mar 1-1903 | Chairman Examining Board of Engineers | Aug 1-1911 | | | |

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J. T. MORRIS, Manager. A. PRESCOTT FOLWELL, Secretary
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gladly and without cost.

MAY 9, 1912.

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Surveys and Monuments in Small Cities

WHILE the lack of all system in laying out the city of San Francisco and in recording surveys and sub-divisions, described in the next column of this issue, seems almost unbelievable, it is probable that this was due largely to carelessness in permitting to continue, longer than has elsewhere been done, conditions which may be found in many smaller cities and towns. In a country village where streets and sidewalks are laid out wider than is necessary for present use, where lots are fairly large, so that a difference of one or two feet in a party fence line is of little moment, and where the value of the land is so low as not to warrant any great expense for accurate surveying, extreme accuracy and elaborate methods may seem to be unwarranted. But probably every such small community expects to grow, and it is the duty of the present generation to see that such surveys as are made are always within the limits of the accuracy warranted by the value of the land, that a few street lines be permanently monumented and that it be required that all surveys be considered as public data and not the private property of the surveyor, and that records thereof be required to be filed

and be carefully preserved. This need not entail great expense, but merely requires that the proper officials take the trouble to see that these records are recorded and filed; and the village officials which do not do this are derelict in their duty and are probably laying up inconceivable trouble for coming generations.

Complaint and Information Bureau

THE average citizen who wishes to find out anything concerning municipal affairs, or who wishes to criticise or enter a complaint concerning any of the doings of public officials or employes, is at a loss just where to make his inquiry or complaint, ordinarily selecting either the police department or the mayor. The latter official frequently finds a large proportion of his time and of his telephone calls occupied by questioning or fault-finding citizens. There therefore seems to be excellent reason for the creation of a bureau or official to which any citizen can turn for an answer to any kind of a question concerning the city, and who is supposed to be able to furnish information concerning all the functions of the city, or to refer the citizen to the exact official who can furnish minor details with which he is not familiar.

Several cities have established bureaus of information, the smaller ones including the functions of such a bureau among the duties of some official such as the city clerk or a mayor's secretary. In New Orleans the Sewerage and Water Board has established a Complaint Department with a direct telephone line, the number of which heads the list in the telephone directory of the 'phones of this board, so that the public will readily call up this department in the event of any complaint. This is kept open day and night, three men being in charge in eight-hour shifts. These receive all complaints and transmit them to the proper departments. This complaint department was established with a view to "handling as quickly and satisfactorily as possible complaints which must necessarily arise and be referred to the several departments, not only as to water connections, sewerage connections and drainage matters, but indeed a multitude of subjects which may be more or less connected with one of the three departments."

Prominence given to the telephone number seems an excellent idea, and it is suggested that in each city the list in the telephone book of telephones for city offices and officials be headed by that of the information and complaint clerk or bureau.

City Records in San Francisco

OF the many reforms in city methods which have been effected in San Francisco since the fire of 1906 not the least are those made in the records of street and property lines by the Division of Surveys. In his report for the year 1911, Chas. H. Holcomb, assistant engineer in charge of the division, describes conditions previous to the fire which seem almost incredible. In the early years the city surveyor, in making surveys of private property in the old portion of the city, where lots to-day are valued at thousands of dollars per front foot, did not use a transit or any surveying instrument other than a steel tape; there were no street monuments or other surveyor's points or data to guide them; it was not known where the street lines were; and in fact there were no official street lines. In many cases they simply measured from the nearest existing improvements and marked on the ground a piece of property having the dimensions called for by the deed. As may be imagined, this resulted in irregular street lines and street widths throughout the district.

One considerable section of the city was never surveyed or monumented by a city engineer, and Mr. Holcomb states that he does not know of a single instance of a map which was filed showing subdivisions of this district

which showed a tie or connection with any adjoining tract, and no consideration whatever was given to the continuation of streets already laid out on such tracts. Some of the original maps of sub-divisions show no figures whatever except lot numbers—no street widths or divisions of any lot or blocks; the streets are irregular, some being curved, but with nothing to show their curvature or their beginning or ending, or any tie or connection with any adjoining tract or sub-division.

The bench marks throughout the city also did not check with each other, differences existing in all parts of the city of one-tenth foot to two feet or more.

In the construction of public improvements, such as street grading, curbing, construction of public sewers, etc., no diagrams were furnished contractors showing the cuts or fills, or depths of sewers; but the only information furnished him by the city surveyor was written with heavy blue pencil on the adjoining fences or buildings. In the absence of these a stake was driven and the contractor was told verbally its relation to the official grade or flow line of the sewer. Line was never given for the construction of sewers, but the contractor dug his trench along the center of the street.

Up to January 2, 1900, when the city charter went into effect, the city and county surveyor's office was a fee office, all the fees becoming his private funds and all salaries and office expenses being paid from his private purse. It was therefore to his interest to keep the operating expenses of the department down to a minimum, and this was apparently done. There was no system of records; the field books, maps and other data were kept in drawers, on shelves, in old dry goods boxes and often piled on the floor in corners. Mr. Holcomb states that he remembers one old-fashioned washstand with drawers in which considerable valuable information was stored and which was the only provision for protecting the records from dust and dirt, except a few box drawers attached to the underside of the drafting boards. There was no system of indexing except memoranda written on legal cap or letter paper and tied with a string to the boxes, drawers or shelves containing the records. Some of the records, such as bearings of streets, etc., were written in pencil on the walls of the office, and although no one seemed to know who placed them there they were accepted and used as reliable.

Between 1900 and 1904 C. E. Grunsky, then city engineer, surveyed and monumented certain homesteads or subdivisions, but outside of these it was an utter impossibility for the most efficient surveyor to make a survey in any part of the city unless he was familiar with its irregularities and had some knowledge of and experience with its confused records.

With the earthquake of 1906 the ground and improvements on it, buildings, street monuments, etc., were shifted, in some cases as much as nine feet, and in addition a large part of such records as existed were destroyed. On June 15 of that year the State Legislature met in special session and passed a law acting under which the Division of Surveys has since been endeavoring to bring some sort of order out of the chaos then existing.

STREET LIGHTING IN WASHINGTON

DURING the year 1911 a number of changes were made in the character of the street lights in Washington, D. C., although the total number was increased by only 216. The number of mantle gas lamps was increased by 150, 40-candlepower electric incandescents by 1,703, 80-candlepower electric incandescents by 118, and 100-candlepower by 17. On the other hand the 25-candlepower electric incandescents, 1,465 in number, were entirely done away with. Of the electric arc lamps there was a small increase in the number of four-ampere magnetites and 6.6 ampere series enclosed; while eight 6.6 ampere magnetites were

installed (there having been none before), and 24 6.6 ampere series enclosed were discontinued. The 16 remaining flat flame gas lamps were done away with, as were 283 of the 1,224 naphtha lamps.

A considerable saving in the appropriation for street lighting was effected by the discontinuance of a number of lamps which had been erected on country roads, where the extent of improvements and the amount of travel were not sufficient to justify their retention; 225 incandescent electric lamps, 145 naphtha lamps and 65 gas lamps were discontinued, effecting an annual saving of \$9,158.

After a number of experiments with incandescent electric lamps, the object of which was to ascertain the kind of lamp best adapted to the tree-lined streets of the city, a new form of lamp was adopted consisting of a 100 watt, 80-candlepower series tungsten. These lamps have been placed on Sixteenth street, from H to U streets, a distance of about one mile; and on the same street from U street to the Piney Branch Bridge, a distance of $2\frac{1}{2}$ miles, 50 watt, 40-candlepower series tungsten lamps have been installed. The posts for these were placed on both sides of the street about 60 feet apart, with one lamp to each post supported in a pendant position inside of a 15-inch globe. On street corners street designations blown with red letters on a white ground have been set in an open frame so that the downward light from the globe illuminates them at night time. This form of lighting has been found very effective for residence streets, and its use will be extended.

PUMP FOR UNSCREENED SEWAGE

A CENTRIFUGAL pump has been invented by R. C. Parsons, the steam turbine inventor, the purpose of which is to pump sewage without first screening it. The principal features by which it is hoped to accomplish this are a knife set in the casing of the pump, combined with a thin fin, or guide, which directs the solid substances toward the impeller, and grooves in the casing by which pieces of wood, cork, etc., which may wedge between the impeller blades and casing may be caught and removed to the outlet. In other respects the general principles of the pump are the same as those of the ordinary centrifugal pump. However, the sewage enters from one side only, and the impeller blades project from a conical surface (the axis of the cone being the axis of revolution of the impeller), the forward edges of the blades also being in a conical plane. The casing also is, of course, conical and fits closely to the edges of the impeller blades; which latter may be advanced toward the casing from time to time as they wear to maintain the clearance between the two at a minimum.

The fin referred to above is at the end of the inlet pipe and extends close to the impeller blades, thus directing the solid substances into the blades, by which they are carried around to the steel knife set in the casing opening, and by this cut into pieces. The passages between the blades gradually increase in width from the point where the cutting takes place to the outer circumference, by which it is calculated to prevent any substance from clogging the passages after it has once been cut up. On the inside face of the casing is a spiral groove designed to catch any small stick or other substance wedged between the impeller blades and casing, which would then be pushed by the blades along the groove to the discharge passages in the periphery of the casing.

One of these pumps was tested in England and showed a maximum pump efficiency of $51\frac{1}{2}$ per cent. when making 577 revolutions per minute and lifting $1\frac{1}{2}$ cubic feet per second against a head of 23.7 feet. If this pump does all which its distinguished inventor claims for it, it will be gladly welcomed by sewerage engineers and superintendents, as it will permit them to eliminate the screens and other devices necessarily employed for removing the cotton waste, shavings, rags, sticks, etc., so generally found in sewage.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

ROADS AND PAVEMENTS

Try Experiments in Paving of Streets

Tampa, Fla.—For the purpose of demonstrating the efficiency, durability and desirability of asphalt paving, R. L. Davis has started laying 200 feet of such paving on North Boulevard for the Florida Asphalt Paving Company. C. C. Rogers, the company's agent, will personally superintend the work. The experimental feature of this work is the fact that the asphalt is to be laid on rolled sand rather than on a concrete bed and the result is being awaited with considerable interest by those interested in good roads. Opposite fire station No. 5 another experiment is being conducted along somewhat similar lines. There brick is to be laid and between the crevices asphalt is to be poured instead of sand as is usually done.

Street Foundation Sinks

Indianapolis, Ind.—Joseph L. Hogue, city street commissioner, has informed the board of public works of the sinking of the foundation under the asphalt pavement in Jackson place, between McCrear street and Meridian street. Workmen who have been repairing the brick gutter at the Meridian street end of Jackson place, discovered that the foundation has dropped about eighteen inches below the asphalt surface and the street was immediately closed to traffic. Jackson place was formerly occupied by a building, the street being opened about five years ago. What was formerly the cellar of the building was filled in and it is supposed that this filling has settled. The pavement was built in 1907 by the Union Asphalt Construction Company and is still under guaranty. The board expects to ask the company to place the pavement in proper condition, which will practically mean rebuilding the street.

Shelby County's Good Roads Plan

Harlan, Ia.—The Shelby county board of supervisors met with a committee representing the Shelby County Automobile Association to devise ways and means for the disposition of the share due Shelby county from the State automobile tax fund. The supervisors passed a resolution ordering the fund expended upon the recommendation of the proper officers of the automobile association and that a resident automobile owner or superintendent be appointed in every township in the county and a sum of not less than \$100 be set aside to be used by him on the roads in that township. The superintendents in the various townships will be under the direction of the county auto association and the board of supervisors. It is thought this plan will work well, and will be tried for one year to give it a test.

New Boulevard Completed

Superior, Wis.—The Billings boulevard has been completed through to Central avenue, and as soon as the road has been settled down by a little use will be one of the finest stretches of road, as well as one of the most beautiful, in the Twin Ports. The boulevard was completed and connected with Central avenue, at the Pokegama River, but a short time ago, the work having been carried on through the winter months. The driveway, which has been paid for by the owners of the property through which it passes, is seven miles long from where it leaves Twenty-first street, to the junction with Central avenue. The beautiful driveway, which is now completed, has been under construction for several years, the work being done under the personal direction of Robert Kelly, general manager of the Land & River Company, and a member of the city park commission. It is Mr. Kelly's hope that the Billings boulevard is but the first link in a chain of similar drives which will encircle the entire city. A driveway from the South End to the West End, following the old military road, is now under consideration and will be built as soon as it can be financed. When completed, this will connect Billings Park, the beauty spot on the St. Louis river, with Nemadji Park, which it is intended shall also be an important recreation spot.

Million Dollars Spent on Columbus Streets

Columbus, Ga.—Columbus during the past twelve years has spent more than one million dollars in paving and curbing according to figures, which have been given out by City Treasurer J. S. Matthews. It has only been within the past few years that there has been any considerable paving done in this city, but during recent years there has been much progress made and the city now has many streets paved and curbed.

Ceremony Begins the Paving in Missoula

Missoula, Mont.—Before a crowd of several hundred persons the first shovelful of earth from Higgins avenue was thrown into a wagon by Mayor John M. Evans, beginning the work of paving the street. The mayor made a speech of felicitation on the beginning of the work and commended it to his successor, Mayor-elect James M. Rhoades. With the band playing, the heads of the departments at the city hall, including the mayor and commissioners and Mayor-elect Rhoades, left the city hall at 1 o'clock, the mayor carrying the shovel bedecked with ribbon which had been presented to him by Contractor George Dietrich, and which will be gilded, inscribed and hung in the city hall to commemorate the paving.

Ancient Indian Highway Marked by D. A. R. Stone

Nashville, Tenn.—The first steps in this State toward making the old Natchez Trace the Indian highway from Middle Tennessee to the southwest, was taken when Old Glory Chapter D. A. R., of Franklin, unveiled a marker ornamented with a bronze tablet sixteen miles from Nashville. It is proposed to mark the old thoroughfare at intervals along its entire length. Many notable figures traveled over the Natchez trace in the old days. Meriwether Lewis, the northwestern explorer, killed himself while journeying over the trace, his grave in Lewis county, Tennessee, being marked by a broken shaft.

Will Hurry Preliminary Work on Bridge

Portland, Ore.—To gain as much time as possible before the interference of high water in the Columbia, Engineer Ralph Modjeski has announced that he will have his men rush the soundings and preliminary surveys for the new interstate bridge with all possible speed. He hopes to have the first estimates and recommendations ready for submission to the special committees of Portland and Vancouver within the next 30 days. Since making a thorough inspection of the location for the proposed approaches and for the type of construction that will be needed, Modjeski is sure the great structure can be built for not to exceed \$2,000,000. He has offered the suggestion that perhaps the Federal Government would be willing to assist in the project by appropriating a certain amount of money, inasmuch as the project is an interstate scheme.

Towns Relieved of Road Cost

Newburgh, N. Y.—The usual 15 per cent. of the cost of building county highways borne by the towns of the State has been eliminated by an amendment to Section 122 of the Highway Law, being chapter 330 of the laws of 1908, which provided that the county highways should be constructed at joint expense of State, county and town; the State paying 50 per cent. of the cost of construction, the county 35 per cent. and the towns 15 per cent. This law of 1908 is amended in chapter 83 of the laws of 1912 which provides that the county highways shall be constructed at joint expense by the State and county and eliminates the expense of 15 per cent. heretofore chargeable to the town. The constitutional amendment providing for the building of highways specifically states that only 35 per cent. of the cost of construction shall be borne by the county, and therefore under the law as amended the State will be obliged to bear the remainder, or 65 per cent. of the construction. It will be easily seen that this amendment relieves the town of a considerable burden borne by it. In Orange county under a special act the towns have been relieved of the 15 per cent. assessment, the county assuming it.

Roads Will Be Oiled Shortly

South Amboy, N. J.—Plans are being made by Freeholder Alfred T. Kerr to accommodate automobilists and people in this city a little sooner this year than last by having the different roads frequented by machines settled with regular road oil preparation. Mr. Kerr has already sent in the order and says that the work will commence within a few days at the least. Mr. Kerr says that owing to the sandy conditions of the roads he is having the work executed earlier than usual.

Active Work Started on New Boulevard

Washington, D.C.—Active work has been started in laying out the initial section of the proposed boulevard which will traverse the property of the Chevy Chase to Great Falls Land Company, between Chevy Chase and Great Falls. It is intended to make the boulevard 100 feet wide, with a road on each side of a central parking, and the tracks of the Chevy Chase to Great Falls electric railway will occupy part of the park space, with a privet hedge separating the roadbed from the driveways and lawns on each side. Landscape Architects Wendell & Treat, of Philadelphia, are in charge of the preparation of plans for the boulevard and other roads on the property, and for the park which is to be developed on the picturesque ground overlooking the Great Falls of the Potomac. The contract for the boulevard construction, as well as for grading the first forty-acre section of the Chevy Chase to Great Falls Company's "Bradley Hills" property, was awarded to the Pittsburgh Construction & Supply Company, and this company's workmen are now on the scene. The boulevard work was started from the end of the property nearest to the city, at the intersection of Bradley lane and Wisconsin avenue.

Start Country Road Work

Norwich, Conn.—Work under the direction of County Road Inspector John Donovan was begun on the repairs to the road from the Norwich town line to Smith's Corners, a distance of about two miles, upon which 300 tons of stone is to be placed in bringing it into good condition. The stone used is of the size called splinters, and the work should be finished in about two weeks. Another piece of road work that will soon be started is the town macadam from Jewett City to Pachaug cemetery. For this the stone has been shipped from the trap rock quarries on the Connecticut river. There will be 750 tons of 1½-inch stone used and 300 tons of splinters. The work should take from five to six weeks. Another piece of road that is to be fixed this spring as soon as it can be reached, is the Bozrah road from the Norwich town line to the Fitchville bridge, a piece of macadam which has been down for a dozen years and is worn out. This is to be rebuilt and for this there is under consideration a bitulithic road to replace the old macadam. If it is found that the material can be procured it is believed that Highway Commissioner MacDonald will order the bitulithic construction.

City Will Soon Begin Oiling Roads

Mount Vernon, N. Y.—A tank car of 10,000 gallons of Dustoline, consigned to the department of public works, has arrived. Commissioner Harlow said he would begin using the oil on the streets as soon as they were sufficiently dry to make a good test of the virtues of the oil. The commissioner also spoke of the 10,000 gallons of Tarvia B, which has been ordered for his department to use on the streets, and said the use of this, as well as the Dustoline, was but an experiment; that he was trying everything which came well recommended, in the line of road oils, so that he might be able to get the best and cheapest to use in Mount Vernon. Tarvia B, he said, was highly recommended by a great many cities where it was used. It was a heavy tar product, which was spread on the streets, and then covered with a top dressing of fine sand. A representative of the concern manufacturing this product will supervise its application to the streets in Mount Vernon. A tank car of Standard Road Oil has also been ordered to be used on the streets of the city this spring. When the board of aldermen meet a resolution will be offered, probably by Alderman Van Tassell, the chairman of the committee on streets and sidewalks, which will provide for the treating of the West Lincoln avenue macadam from Scott's bridge to the Circle with Asphaltoiline, at a cost of three and five-eighths cents per square yard, or a total cost of about \$500.

Much Work Accomplished on Good Roads Day

Tacoma, Wash.—Good Roads Day in the State of Washington, which was observed April 12, meant much for the Pacific highway, according to road enthusiasts. Governor M. E. Hay toured over the worst sections of this international route in the State. The territory he covered was in Lewis and Cowlitz counties. In the southern part of Lewis county, just south of Toledo, 150 men were out celebrating Good Roads Day by repairing their section of the Pacific highway. Recent motorists who have made the trip between Tacoma and Portland have complained about the present condition of the road. However, with the interest that was stirred up by the observation of Good Roads Day, there is no question that this international route through the southern part of Washington will be immediately repaired so that all kinds of travel can pass safely and comfortably over it during the rest of the season.

Improving Approaches to Viaduct

Dallas, Tex.—Gravel is now being laid on Arlington street, to form a temporary approach to the viaduct, for use while Houston street is being paved and while pipe-laying operations, preparatory to paving, are under way in that street. Houston street is to be paved with creosoted blocks from Commerce street to the viaduct entrance, and is to be the permanent viaduct approach from the Dallas end. At present Houston street, within two blocks of the viaduct, is so narrowed by pipe excavations and roughened by previous digging that practically but one vehicle can pass at one time. All of the gas, water, telephone and other pipes to be put under this street have been laid, but a storm sewer is yet to be placed there before paving. On the Oak Cliff side, while work is yet being done in the placing of concrete curbing, the approach proper is complete.

SEWERAGE AND SANITATION

Dredge Mouth of Sewer

Bridgeport, Conn.—Toole & Sunderlin will soon start the work of dredging the mouth of the Novle avenue trunk sewer, which is the proposed remedy for the abatement of the noxious odors which in summer drive the residents to distraction. The mouth of the sewer, which empties just below Berkshire bridge, will be dredged so that the flats will be covered at low tide and three additional lengths of pipe will be placed on the sewer. In this manner it is hoped that the sewage will not lie on the flats at ebb tide, exposed to the sun, but will be carried out with the tide. The work was authorized recently at the meeting of the common council. Work on the Wilmot avenue sewer outlet will commence within a few days, the contract having been let to the D. B. Pierce Company.

Nashville Will Pay for Dead Flies

Nashville, Tenn.—The Anti-Tuberculosis League of this city has inaugurated a fly campaign in which it offers 10 cents a hundred for dead flies brought to the offices of the organization between 3 and 4 p. m. for the week beginning May 1. Consignments will be paid for in lots as small as ten, and many of the youngsters of the city who have probably never heard of the Nashville Anti-Tuberculosis League will be able to pick up a few extra pennies by chasing the ubiquitous household pest with the implements at hand.

Would Have Legislature Abolish Public Cup

Spokane, Wash.—With one of the biggest attendances in the history of the organization of the State Association of Master Plumbers of Washington closed a two days' annual convention in Spokane by passing resolutions providing for the following issues: Master plumbers of Washington will ask the legislators to pass laws providing for the abolishment of public drinking cups. They will also ask the legislators to pass laws providing for the installation of bubbling cup drinking fountains in all public places. Public comfort stations are advocated and steps will be taken to have all cities with a population of more than 20,000 provide such stations. National officers will be urged to use their best efforts in having all manufacturers guarantee enameled ware and pay for the cost of replacing defective enameling within a year's time.

Victoria Extends Sewer System

Victoria, Tex.—An extension of the Victoria sewer system one and one-half blocks on East Convent street has just been completed. This extension necessitated the deepest cut so far made, a depth of 16.6 feet. The system is now being extended four and one-half blocks on East Juan Linn street from the intersection of William street to the intersection of Cameron street. These extensions will give about twenty more connections. The system, which embraces about four miles, now has a total of between 200 and 300 connections. The entire system was built without a bond issue. It started with a few blocks about six years ago and has been extended from time to time by the owners advancing the cost in rents.



Courtesy Daily Evening Item, Lynn, Mass.

RUBBISH-STREWN STACEY BROOK.

Stream Obnoxious to Property Owners

Lynn, Mass.—The accompanying picture shows Stacey brook, a rubbish-strewn stream, which for years has been a source of considerable annoyance to surrounding property holders. Residents along the southwest side of Eutaw avenue and Chatham street, whose property adjoins Stacey brook, cling to their original answer given to officials of the board of health that they will not take any action toward improving conditions which now exist along the course of the brook. The brook, which is no more than 75 yards in length, is considered as being one of the most disagreeable and unhealthful brooks flowing through a thickly settled residential part of the city. The water which flows through Stacey brook is mostly of a dirty nature, it being the drainage of one side of Meadow Park and much of the sewer water from one part of the Highlands. According to the neighbors, the sewer water settles in the meadow during the winter months, when drain pipes running from Adams street become clogged with ice. When the warm weather sets in the water starts to flow through the brook and fills the air with a very obnoxious odor. The neighbors affected by the stream say there is no reason why it should not be filled with gravel and the meadow drained off by a sewer pipe.

Sewerage Problem Is Solved

Dallas, Tex.—A sanitary sewer that has become stopped up in the alley between Ross and San Jacinto near Leonard street has been the occasion of much trouble for the city engineer's department, about 50 feet of new sewer having to be built at a depth of 14 feet to provide a means for the sewage to pass by. The sewer in this alley is of the old type built at first without manholes, and now, according to City Engineer Preston, in danger of collapsing, so that a new sewer had to be built to go around the stoppage. One of the old fire engines had to be called into service to pump out the sewer. Mr. Preston said many people are careless as to what they throw in sewers. Combs, sticks and animals of various sizes have been found clogging sanitary sewers. Anything of a large size may get crosswise in the sewer and plug it up, causing any amount of trouble.

WATER SUPPLY

Work Progressing on Jellico's Water System

Jellico, Tenn.—Work on the water works and sewerage system for Jellico is moving along rapidly. When this system is completed Jellico will then be able to offer many special advantages for the location of different factories. The town is taking on new life.

Valves Placed at Every Intersection

Lebanon, Pa.—The city water department has completed the work of placing the water valves at the street corners on Walnut street from Front to Tenth streets. Hereafter in case of a break in the main or in a service pipe on Walnut street the water can be shut off by blocks instead of several blocks as formerly. Water Superintendent Shroff placed valves in all 8-inch, 6-inch and 4-inch mains.

Old Underground Reservoir Explodes in Bangor

Bangor, Me.—While workmen were digging in Mercantile square and Broad street, gas exploded, blowing the top of the old reservoir in Mercantile square completely off and opening a big hole in the ground some 20 feet across. Granite blocks and paving blocks were tossed into the air and fell all about the hole. An express outfit was standing in the square, just over the reservoir, and was tossed bodily into the air. When the dust settled the horse was found in the hole and Police Captain Fahey, with other officers and the aid of bystanders, were on the scene striving to rescue the animal. Although all windows in the vicinity were badly shaken, no harm could be discovered, aside from the damage to the street, which was well torn up for the distance covered by the reservoir. This reservoir, which is a very old one and is a relic of the days when Bangor had no system of piped water supply as at present, is a big hole and served to put out many a bad blaze in the days before '75, when the late Mayor Laughton struck the first blow in the erection of the Bangor water works plant at Treat's Falls. It has not been used for many years and few people suspected its existence until this explosion opened it up.

Break in Main Floods Streets

Syracuse, N. Y.—The high pressure water main which runs from the Woodland reservoir on Bellevue Heights to the University Hill section broke one night last week at Kirk and Landon avenues, cutting a hole in the street 15 feet deep and 30 feet across. The entire section east of the university was cut off from water. At South Salina street and Kirk avenue the break raised the pavement and street car traffic was temporarily suspended. The water department, immediately upon learning of the break, called out all its available men and at midnight a low pressure service had been established. This was the same service used on the university highlands before the high pressure main was laid. The pipe which gave way was 20 inches in diameter. It was laid two years ago when the second conduit from Skaneateles lake was completed. It was connected directly with the standpipe which stands on the hill at the west of the reservoir, and runs from that hill straight across the city to the university. When the break occurred a roar which could be heard several blocks accompanied it. Water was drained from pipes in the neighborhood and the hole left in the street at Landon and Kirk avenues was almost large enough to hold a house. Water rushed from the 20-inch pipe through all of the streets in the vicinity, cellars were flooded and electric lights extinguished when water came in contact with the wires.

May Buy Filtering Plant

Franklin, La.—This city is to have an up-to-date filtering plant. The city council now has under discussion the purchase of a large filtering plant from the Sterling Sugar Company, which ordered it to filter juice with, but which does not answer the purpose. The company is offering it to the town at a reasonable figure, and it is thought that the council will buy and install it after the election next month. The water of Bayou Teche, when filtered, is good for all purposes except for drinking, but as it is now it is unfit for use at all. It is the only water which runs through the water works, and the citizens are compelled to use it during the dry seasons.

New Well Brought in at Cuero

Cuero, Tex.—At a depth of 1,170 feet the third well for Cuero was brought in and is reported to flow more water than the other two wells combined. At 1,065 feet it was thought that sufficient water was on hand to supply the well and strainers were put in. The water flowed from the top, but not in large enough quantity to leave the well as it was.

New Water Main Ready

Bayonne, N. J.—Within ten days the new 30-inch main giving Bayonne an additional supply of 15,000,000 gallons of water daily will be in use, states Superintendent Charles T. Kavanagh, of the New York & New Jersey Water Company. The last rivet has been driven in the new pipe line at the Arlington gate house and the work of cleaning out the main and applying the pressure tests commenced. With the increased capacity afforded by the new main Bayonne will have 30,000,000 gallons of water daily in the future. The main now in use has a capacity of only 15,000,000 gallons and for a long time past this has at times proved inadequate. Not only will the new main give the city an increased pressure in all parts, but it will be especially welcome to all the large manufacturing concerns who have suffered more or less in the past through lack of water pressure. Water famines in the future in Bayonne will be obviated, as in case anything goes wrong with one of the mains the other can be operated independently. Both, however, can be used at the same time and a constant supply of water at all times is now assured. Jersey City will also benefit by the new main under the reciprocal agreement with the New York & New Jersey Water Company. The water supply of the West Side and Greenville sections of Jersey City will especially benefit. For the past three weeks the New York & New Jersey Water Company has been supplying Jersey City with what surplus of water could be spared from the Bayonne supply, which surplus is not all that Jersey City could have taken. With the new main placed in operation Jersey City will further benefit. The water company installed a new main entirely at its own expense as per its contract with the city of Bayonne.

STREET LIGHTING AND POWER

Electrolysis Cost \$5,000,000

Chicago, Ill.—Public service corporations in Chicago are facing the possibility of having to expend an aggregate of \$5,000,000 if the anti-electrolysis ordinance pending in the city council is passed. Ray Palmer, the city electrician, after investigation said escaping currents affected steel structures in alarming degree and that damage amounting to hundreds of thousands of dollars annually was done to buildings and to the city's water mains. The ordinance would require the companies to equip their ground systems to register any drop in their currents which shall have a maximum of 12 volts. The currents now register as high as 80 volts.

Ceremonies Attend Opening of White Way

Birmingham, Ala.—In the presence of the largest crowd ever congregated at Capitol Park, with one possible exception, on the evening of May 1 Miss Carrie Yates, amid cannons' roar and the strains of martial music, dashed a bottle of sparkling wine against the first post of the Twentieth street White Way and pronounced the words that caused the switch to be thrown and a flood of light to flash along the busy, thronged thoroughfare from Capitol Park to the Louisville & Nashville depot. The occasion was very gratifying to the White Way committee, as not only was the lighting of the street all that could be desired but the enthusiasm of the immense crowd and the appreciation of the business men and property holders of Twentieth street and the citizens in general amply repaid them for their time and trouble in bringing about the successful result. The Twentieth street Great White Way is one of the finest examples of civic pride in the city of Birmingham. There are 15 posts in Capitol Park, which will furnish an excellent lighting system for that place. From the park the White Way runs on down Twentieth street to the Louisville & Nashville depot. The posts for the lights are of a beautiful design.

New Lighting Plan to Be Tried in Butler

Butler, Pa.—The new commercial department will make contract for light that will permit unlimited use of electric light. John Humphrey, superintendent of the Butler Light, Heat & Motor Company, has secured the services of the experts from the West Penn system to introduce this plan. Under the new system a contract may be made for a certain amount of candlepower, and this will be furnished at a flat rate of from \$1 a month up. It makes no difference how many lights are in the house, the only limitation being that no more than the maximum number be permitted to burn at the same time, for instance with 20-candlepower tungsten lamps as the basis for calculation, he will not be permitted to burn more than four lamps at the same time, although there may be a dozen lights in his residence. Up to this limit, however, the consumer may burn the lamps as long as he desires, morning, noon or night, without increasing the size of his bills. Under this arrangement no meter will be placed in the houses. Contracts will be made for residences and will be a straight lighting contract. With their slogan to have electric light in every home in the city, the company is also offering to wire any home complete ready to light, including tungsten lamps and shades, at \$3.50 per room, giving the property owner time to pay for same.

FIRE AND POLICE

Plain Clothes for Truant Officer

Rahway, N. J.—Owing to objections raised by several citizens, a resolution offered by School Commissioner Baldwin at a meeting of the board of education was unanimously passed. It provides that the chief of police be requested hereafter to send Truant Officer Jacob Kraus in citizen's clothes instead of police uniform, as the appearance of pupils passing through the streets in charge of a uniformed officer has a bad moral effect on the child, causing undeserved embarrassment. Mr. Baldwin stated in making the motion that one family in the city had determined to move if the practice was continued.

City Favors Brick Fire Escapes

Philadelphia, Pa.—This city is said to have one of the best fire escape laws in the country. The fire escape used in Philadelphia is built on the outside of the building and is a brick tower with steps leading down the tower to the ground and iron balconies leading to the door of the tower from each floor of the building.

New Fire Engine Not Ready for Use

South Hampton, N. H.—Although a new chemical fire engine was stored in the town building, the residents of South Hampton were obliged to fight with buckets a fire which destroyed 13 buildings. The engine had but recently arrived and had not been charged with chemicals.

Springfield's Model Fire and Police Stations

Springfield, Mass.—Springfield's police and fire stations, both of which are fireproof structures, equipped with every modern appliance, are located side by side. Chief Quilty is about 45 years old and has been in the police service there nearly 25 years. His ideas about the administration of a police department are right up to the minute. He says, for instance, that drunkenness is not a misdemeanor, but a disease, and that the policeman who arrests an intoxicated man when it is possible either to send the victim home or find some other shelter for him ought to find a new way of getting a living. There are six detectives under Chief Quilty and he says he is going to have four more in the near future. In the bureau of criminal investigation there are a male clerk and a female assistant clerk, who also perform other departmental duties. The chief has a private secretary and there are about half a dozen station officers, including one at an information desk. Cement floors, concrete ceilings, marbleized shower baths, passenger elevator, open plumbing with brass fixtures throughout, a suite of rooms for the chief and separate quarters for each fireman are some of the up-to-date features of the fire headquarters building. The station was erected at a cost of \$102,000 and about \$30,000 more was expended for the latest type Gamewell fire alarm system, which is installed in a large room on the third floor.

AUTO APPARATUS NOTES

Lynn Officials Visit Springfield to Inspect Auto Apparatus and Tell What They See—Satisfactory Test of Jumbo Apparatus at Ventnor—Other Apparatus Received

Chicora, Pa.—Chicora had a demonstration of fire fighting apparatus, when Mr. Platt, of Elmira, N. Y., representing La France Company, gave a demonstration with the chemical wagon recently shipped to the fire department of the town. The outfit consists of a chemical tank and hose mounted on a two-wheeled truck, capable of being handled on the hills of Chicora and will be a valuable adjunct to the fire fighting equipment of the town.

Racine, Wis.—The new combination hose and chemical auto truck, which was rebuilt at the Mitchell-Lewis Motor Works from the old horse-drawn vehicle, has arrived at the station and has been put into active commission. The new fire truck has a 25-horsepower engine, which is about one-third of that of the auto at the No. 2 station. It is capable of making from 30 to 35 miles an hour on good roads. It has a large chemical tank on the front part, which is capable of holding 50 gallons, sufficient to put out quite a blaze, and also has 200 feet of chemical hose. A brass receptacle, which holds acid, is on the rear part of the machine, so that should the chemical tank "run out" it can be recharged at the scene of the fire. There is also 1,000 feet of 2½-inch hose on the auto, which is the equipment ordinarily carried by a fire engine. There are three men at the fire station who already know how to run the machine, and the others are to be taught so that in case of emergency any one of the firemen can guide the truck to a fire.

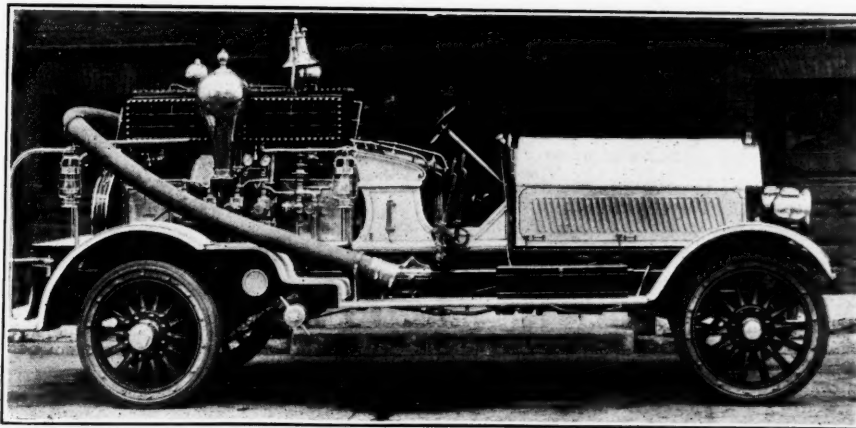
Naugatuck, Conn.—In the list of estimates for the coming year to be presented to the firemen there is an item of \$9,000 in the fire appropriation for an auto chemical and pump engine. Fire Chief Clark said it was his opinion that such an apparatus was needed in this borough. He has communicated with different fire chiefs and has gathered statistics on the cost of the auto apparatus in comparison with the horse-drawn vehicles. The upkeep is a great deal less. He was asked whether Naugatuck was too hilly for an auto engine and he replied: "No, the engine which I had in mind when I recommended an appropriation of \$9,000 is an auto with a 100-horsepower engine, and it can go up any hill in the borough as the rate of 35 miles an hour." In regard to its ability to go through snow and mud, the chief said that from the communications he had from fire chiefs throughout the country the auto engine could proceed through snow and mud better than a horse-drawn apparatus.

Springfield, Mass.—As the guests of an automobile concern that desires to sell to the city of Lynn the motor-driven vehicles for the police and fire departments, the bids upon which have been opened in the purchasing department. Mayor Connery and Commissioners Turnbull, McPhetres and Campbell went to Springfield last week, making the trip over the road in autos from Boston. They were accompanied by Fire Chief Thomas A. Harris and Purchasing Agent Albert S. Carleton. What they saw in that city, famed for its model local government and luxurious municipal institutions, opened the eyes of the Lynn city officials to opportunities for improvements here which will undoubtedly have a marked bearing upon their action in numerous directions. While their visit was primarily for the purpose of inspecting the Knox automobile works, the commissioners, in the few brief hours at their disposal, made an earnest effort to probe the mystery of how Springfield, a city of approximately the same population as Lynn, can disburse such enormous sums in municipal utilities without getting head over heels in debt. Every fire station in the business district of Springfield and some of the houses in the outskirts are equipped with the motor-driven vehicles. Not only are

the chemicals and hose apparatus on chassis, just hook and ladders are driven by 40-horsepower electric tractors in each wheel. "In a few years there will be no horses in the Springfield fire department," said Chief Daggett. "Our experience has proven beyond the shadow of a doubt that the auto apparatus is more advantageous and economical." The first combination hose and chemical auto turned out by the Knox concern, and one of the first pieces of auto apparatus in actual service in the country, was shown to the Lynn commissioners by Chief Daggett, who said that the vehicle is still in good enough condition to be used in cases of emergency. In the police department there is a Knox combination patrol and ambulance which Chief Quilty reports has been in commission eight years and is in satisfactory running order now, although it is used comparatively little because a bigger and more up-to-date vehicle was purchased in 1910. At the Chestnut street fire station the apparatus represents the very latest word in paraphernalia for the protection of life and property. The combination hose and chemical with turret nozzle attachment, made a distinct impression upon Mayor Connery and the other commissioners. Alongside this piece of kit is what is called "the life-saving flying squad wagon," a vehicle built along the same general lines as "Squad A" at the Broad street fire station, but larger and carrying about every known life-saving device. Boxed up underneath the driver's seat is even a supply of oxygen, to be used for resuscitation purposes. There are four of the "Springfield type" of combination hose and chemical wagons in every-day use in that city, and the firemen who have charge of the kit reported that in responding to alarms they have proven that they can get away quicker with the automobiles than if they had to deal with horses. Having inspected about all of the auto fire apparatus in Springfield the Lynn officials were hustled over to Holyoke, where they met Chief Lynn and Deputy Chief Riley and looked over a combination hose and chemical and a flying squadron which drove several horses out of fire headquarters never to return. Returning to Springfield, the commissioners inquired about the water system and learned that there is a high pressure service of 140 pounds so that pumping engines are not necessary to that department.

Salt Lake, Utah.—When the new combination chemical and hose fire automobile arrived in Salt Lake and was being lowered from a freight car in the yards of the D. & R. G., fire broke out in a boiler shop of the Rio Grande Western, Fourth South and Fifth West streets, not more than 100 feet away. Fire Chief W. H. Bywater started the machine under its own power without a hitch, but the machine then had not been equipped with hose and its tank was without chemical. Apparatus from fire headquarters arrived and extinguished the flames, while the new machine remained on the scene, a spectator. Damage caused to the building of the boiler house is estimated at \$50. The new combination was tested later and found in perfect working order. With ease it wound its way to the tower which overlooks City Creek canyon.

Jacksonville, Fla.—The city recently gave a successful test of a combination motor. At the present time the city



WEBB ENGINE, WITH PISTON PUMP, FOR NEW YORK DEPARTMENT.

owns a high-pressure wagon and one combination motor. An aerial truck will soon be added to the equipment.

Little Rock, Ark.—A motor-driven patrol, a 40 horsepower motor with a body capacity for ten persons, has been added to the Police Department. It is claimed the motor is capable of making 50 miles an hour. Little Rock is said to be the second Southern city to adopt motor-driven patrol.

Ventnor City, N. J.—The new Robinson Jumbo fire engine recently purchased by Ventnor City has been given an official test. Chief Engineer Kuhl and Assistant Chief Albertson directed the work of the firemen in handling hose and nozzles, while Charles Waller, of the Robinson company, and David Stuart, driver of the new machine, operated the machinery. The fire committee of council was represented, including Chairman William S. Cuthbert, Councilman John Donnelly, Jas. W. Lane, Gustav Kessler and Samuel H. Headley, Chief W. J. Black and Secretary James Farley. Chief Elfreh, of the Camden fire department, was also a witness of the test. As to the capacity of the new engine for throwing water it surpassed the guarantee. When connected with a plug near the water works the engine threw a 2-inch stream over the standpipe 110 feet in height, pumping 958 gallons of water per minute, as against the guarantee of 700 gallons. The test was over three hours in duration. It began with the use of a 1¼-inch nozzle, when with a pressure of 135 pounds the engine threw 536 gallons per minute. With two streams siamesed into one and a pressure of 60 pounds the apparatus pumped 704 gallons per minute, and with two lines 250 feet each 770 gallons were recorded. The record throw, however, was made with what the firemen term a "deluge set," three lines of hose coupled to a 2-inch nozzle through which the stream was thrown. With a pressure of 65 pounds 958 gallons of water were pumped. Following the test of the new machine the Webb automobile fire engine, the first apparatus of that kind bought by Ventnor in 1910, was tried out and made its maximum throw of 580 gallons per minute. E. Burt Gifford operated the Webb engine. Chairman George Carson, of the fire committee, was in charge of the test, other councilmen present including President Dahlgren Albertson, Councilman George Powell, Councilman Adolph Apel, Councilman Victor Fisher and Mayor Bew. While guaranteed to make a speed of 30 miles an hour in going to a fire, the new engine attained a maximum rate of 32 miles in a spurt up Ventnor avenue. Among others who witnessed the test were Chief of Police Frings, Patrolmen Riley and Megendy, City Treasurer Robert W. Bartlett, Dr. Richard Bew, Dr. Thomas Youngman, William Kuhl, Jr., foreman of the engine company; Charles W. Johnson, foreman of the truck company; C. Claude Scull, George S. Datterer, Enoch Turner, Carl M. Voelker, Frederick Hickman, William Howarth, Richard Harvey, Joseph F. Thomas, John Mahoney, William A. Hamman, Lewis Mathis, City Clerk E. Steelman Royal.

GOVERNMENT AND FINANCE

Decide on Seven Departments in Government

Los Angeles, Cal.—The new commission government charter which is to be drawn for Los Angeles by the charter commission now at work will be based upon a commission of seven members instead of either five or nine, as had been considered.

Will Familiarize Himself with Work of Departments

Cincinnati, O.—Mayor H. T. Hunt, of Cincinnati, feels that knowledge necessary to guide his executive actions so far as they concern the various city departments can be acquired only by experience in these departments, and, accordingly, he will begin at once to familiarize himself with the work of these departments by doing it himself for a while. He will devote from a day to a week to studying each department, acting as a policeman and fireman the same as the man of lowest rank in these departments, and even intends to drive a street cleaning cart and to don the garb of the "white wings" and assist in removing the refuse from city streets.

STREET CLEANING AND REFUSE

To Clean Up City

New Rochelle, N. Y.—The school children have begun a campaign in all parts of the city to clean front and back yards and to look after the cleaning of the streets and alleys. Mayor Frederick H. Waldorf and Edward J. Cordial, president of the city council, have offered gold watches to the boys and girls who have the cleanest yards and who have caused others to clean their yards by the end of June. The children will form corps to patrol the streets to keep them free of debris and papers and ask every person who is in the habit of throwing papers, fruit skins and cigar stumps in the streets to throw them into receptacles to be placed at intervals by the general improvement association.

Texas Clean-Up Day Was Great Success

Fort Worth, Tex.—"State clean-up day," April 25, was observed by about 200 municipalities in Texas and the observance of the day is assured of becoming an annual event. The movement for a general clean-up day was started by the Texas Commercial Secretaries and Business Men's Association a few weeks ago, the organization believing that by designating a certain date a greater interest would be created and better results accomplished. It was quickly taken up by every commercial organization in Texas, with the result that in most cases the mayor of the city designated April 25 a holiday and called on all the citizens to assist in making the clean-up a pronounced success. In Wichita Falls the event was decidedly on the social order and not only a great amount of good was accomplished but a delightful time was had by all. Prominent business men and society women rubbed shoulders with their less fortunate fellow-citizens, while the city band rendered selections from the latest operas. At Stamford, El Paso and Sherman the work was under the general direction of the commercial organizations, assisted by the local women. Two hundred and forty-six commercial organizations out of a total of 347 in the State responded to the call of the commercial secretaries and twenty-seven organizations expressed the intention of holding a clean-up day monthly.

City Now Receiving Pay for Sweepings

Bridgeport, Conn.—Determined to carry out the programme of economy and efficiency laid down by the administration, Superintendent of Streets A. J. Bodine has now hit upon the idea of keeping the street sweepings which are collected every day and selling them reasonably for fertilizer to any who may have use for them. The sweepings are taken to the city yard, where all refuse is culled from it, and it will be sold for \$1 a double load. These sweepings make very good fertilizer for lawns and a number of loads have been sold, although the practice was put into operation but a few days ago. In the past it has been the custom to allow the park department to use the sweepings as fertilizer and to scatter the surplus over vacant lots, but under the new plans a revenue will be received from the work of the street cleaners.

Portable Incinerators Aid in Cleaning Up

Chicago, Ill.—"Clean-up week," which will begin with the official O. K. of Mayor Harrison, at the suggestion of the Woman's City Club, will enlist the activities of the city street cleaning department, various women's clubs and the school authorities. All these agencies are co-operating in an effort to clean up the vacant lots of the city, remove all tin cans and in general to make Chicago for one week "the spotless town." A conference of precinct and ward leaders will be held in the Northwestern University building to arrange for the details of the campaign," said Miss Anna Nicholes, superintendent of the Woman's City Club. "Mayor Harrison and Superintendent of Streets Frank Solon have expressed their interest in the plan and Mr. Solon has promised to cart away all material collected in the vacant lots. Under the law the city has no right to clean up the vacant lots. However, if this is done by local improvement associations and groups of interested neighbors and the waste is piled on the lots near the alleys, the city can and will carry it away. Of course all material which can be burned easily ought to be burned in vacant lots. The city keeps four men with movable incinerators in each ward to burn up the loose paper.

Object to City Dump

Dallas, Tex.—South Dallas people are protesting vigorously against a dump being placed in their part of the city. About 100 appeared before the city commission to protest. They declared the south wind blowing from the pile of refuse will be a menace to health as well as a source of much unpleasantness. The city already has purchased land for a dump in South Dallas and intends to abandon the old dumping grounds west of the Dallas-Oak Cliff viaduct.

RAPID TRANSIT

Commission Pleased with Side Entrance Car

Washington, D. C.—That the new side-entrance type of street car, with the low step, which was given a "try-out" by the officials of the Washington Railway and Electric Company, is satisfactory in every respect is the individual opinion of members of the Interstate Commerce Commission and of the District electric railway commission, who were guests of the company on the trip. While the subject of the new car was not brought up at the meeting of the District electric railway commission, the members are enthusiastic regarding the car. They say that it is safe and sane, and that the women will not have many opportunities to complain if it is selected as the general style of car for local street railway use.

New Pay-as-You-Enter Cars

Macon, Ga.—Two of the six new pay-as-you-enter cars which were recently ordered by the Macon Railway & Light Company, and which will be operated on the East Macon line, have arrived in the city. The cars are on the same order of those now operating on the Bellevue line and will seat 48 passengers. Four other cars have been ordered and all six will be in operation before the Confederate reunion. The new cars will greatly improve the East Macon line which is now one of the longest routes in the city.

Cheaper Trolley Fares in Reading

Philadelphia, Pa.—The Supreme Court has affirmed the Berks County Court in the city of Reading's strip ticket litigation involving the amount of fare. Under the decision the Front and Fifth street and Schuylkill avenue lines controlled by the United Traction Company must sell six tickets for 25 cents. The Supreme Court says: "The United Traction Company was bound by the provisions of the ordinances of December 8, 1906, and its lessee and successor, the Reading Transit Company, is now so bound. That ordinance provides that 'the rate of fare shall not exceed five cents for a single fare or six tickets for 25 cents.' These words certainly mean something; but in the breach of good faith with the city of Reading, those in control of the affairs of the Reading Transit Company now assert they mean nothing. It is trifling with judicial patience to contend that both parties so negotiating did not understand and intend that, upon the completion of the loop, the mode of fare should remain unchanged."

Dual Plan for Subway Extension

New York, N. Y.—The Public Service Commission for the First District within the last week adopted the route for the proposed tunnel under the East river from Manhattan to Brooklyn, which will be used by the Brooklyn Rapid Transit Company in carrying out the dual plan for subway extension. This route departs from the Broadway subway in Manhattan at Trinity place and Morris street and will run through Beaver street and Old Slip to the East river and under the river to Clark street, Brooklyn, continuing up Clark street to a junction with another subway in Fulton street, also to be operated by the Brooklyn Rapid Transit interests. On the Manhattan side connection is also provided with the Center street loop. The Center street loop subway, which connects the Williamsburgh, Manhattan and Brooklyn bridges, is also designed for operation by the Brooklyn Rapid Transit interests. This is the second tunnel to Brooklyn provided for by action of the commission within a month, the other one being the Whitehall-Montague street tunnel, which will be used by the Interborough Rapid Transit Company to connect the new Seventh avenue subway in Manhattan with the Interborough subway lines in Brooklyn.

Pay Car for Boston Elevated Road

Boston, Mass.—Men employed by the Boston Elevated road are now being paid from a car specially constructed for the purpose, instead of from the old wagons which required the transfer of the money from the wagon to a temporary office at each stop. The road has two of the new cars, one working in the divisions on the north, the other on the south side of Milk street. The car is a traveling office, with the paymaster and payroll reader in a cage. The man handling the money takes the proper amount from a machine, according to the amount read off by the man holding the payroll. The latter, in turn, counts it before handing it to the employee who signs for it. The cars are also used to make the round of all the division car barns to collect the receipts of the day in charge of the collector, conductor and motorman. A safe is built inside of the car.

MISCELLANEOUS

Chemist Discovers Liquid Gas Suitable for Lighting

Pittsburgh, Pa.—Camping parties and tenants of bungalows in the rural districts may hereafter have their own lighting plants, according to Dr. Walter O. Snelling, consulting chemist of the Federal Bureau of Mines and of the Isthmian Canal Commission. In the progress of his experimental work here he has produced a liquid gas which he says will supply lighting for isolated residences at small cost. Dr. Snelling says that a steel bottle will hold enough of this gas to furnish light for a house for about a month. He adds that it has passed the experimental stage and that the new product will soon be available for home use. Plants have been established and the manufacture of the gas will soon be in progress. It is called gasol.

Property Loss at Memphis by Flood

Memphis, Tenn.—The estimate of city officials as to the damage to the overflowed district in the northern part of the city during the recent flood is that the direct property losses aggregated \$1,400,000. The data prepared by the city engineer's office and the other departments will be submitted to Major Clark S. Smith, U. S. A. engineer corps, by Mayor Crump in person. In the estimates of damage nothing was said as to the damage to the city water department, except the loss of revenues resulting from the shutting down of the Auction avenue pumping station, which was placed at \$10,000.

Massillon Offers Prize for Best Slogan

Massillon, Ohio.—The board of trade slogan committee is receiving suggestions by the hundreds and the interest being displayed in the contest is meeting their best wishes. Over five hundred suggestions have been received to date and more are coming in with every mail, not only from Massillon but from other towns as well. Several have been received from New York and even from the Pacific Coast. The writer of the best suggestion is to receive a prize of \$15. The slogan should be short and spicy, so as to hold the attention of the reader and make him remember it. The plan is to have a steel arch erected about half way up the West Main street hill, just above the railroads, where it will be plainly visible from the square and the trains passing through the city. The slogan adopted will be put on this arch in incandescent lights. The cost of the construction of the arch is to be met by popular subscription and the Massillon Electric & Gas Co. will foot the entire lighting bill and maintain it. It is desired to place about 1,000 incandescent bulbs on the arch, and if the plans are carried out the entire structure will cost from \$1,000 to \$1,200. The arch will stand as a permanent emblem of the prosperity of Massillon. Several well known cities have adopted the slogan plan, among them Easton, Pa., Warren, O., and Montgomery, Ala. Montgomery has a large framework lighted with both white and colored lights. The effect is that of a large skyrocket discharging hundreds of colored balls which break out into the shape of a key and the motto, "Montgomery, Your Opportunity." In Easton the name "Easton" appears behind the rising sun and underneath are the words "The City of Resources." Warren has a movable, animated border surrounding the motto, "We Work, We Win."

Would Build Wall to Exterminate Mosquitoes

Elizabeth, N. J.—The most recent criticism of the method of mosquito extermination now being employed was made by Andrew E. Kenney, president of the North Plainfield Board of Health and recently appointed a member of the Somerset County Board for the Equalization of Taxes. Mr. Kenney is an engineer. In his criticism he made a suggestion for reclaiming the 28,000 acres of salt meadows, where the pests are bred. Mr. Kenney's scheme would provide for the State or Union and Essex counties to undertake the work of reclaiming the meadows by erecting a solid concrete wall along the banks of Newark Bay from Elizabethport to Newark. The wall would have to be high enough to prevent the tide passing over it and solid enough to withstand the pressure put upon it by the water at high tide and in the winter when the bay is covered with ice. Six feet in width, he considers, would be sufficient. The length of the wall would be about seven miles. The necessary height could be determined by a study of the tides.

Will Hold Dances Under Municipal Control

Portland, Ore.—Municipal control of public dances is the latest venture to be attempted in this city. This plan was formulated at a meeting of a special Council committee consisting of Councilmen Baker, Menefee and Watkins and the Social Service League, consisting of representatives from the various women's clubs to provide amusement for the young people as a substitute for the public dances prohibited by ordinance. The plan is to have at least one public dance in the city each week, to be attended by a censor appointed by a committee authorized by the Council. The Public Service League will select six commissioners who shall have supervision of these dances, and their appointment will be approved by the Mayor. These commissioners will make all arrangements for the dances, including the renting of halls and musicians and the appointment of floor managers. "Since the public dance halls have been closed by the Council, there has been a demand for the city to provide some form of amusement for young people," said Councilman Baker in discussing the proposition. "The plan for municipal control of public dances, I believe will solve the problem and give young people clean, wholesome recreation. Each of the dances will be closely censored, and they will be orderly and clean. The admission fee to be charged will be small, but in my opinion, will be sufficient to meet the expenses of renting halls and employing musicians. To make sure, however, that there will be no failure of the plans, the Council will set aside a fund from which any deficit may be taken."

Installing Playground Apparatus a Good Investment.

Rocky Ford, Col.—This city has just reason to be proud of its schools, which, according to the report of County Superintendent of Schools S. S. Phillips, are among the very best in the State. Until a short time ago it was always a perplexing question for the teachers what to do with the scholars at recess and noontime, for they must be out of doors, and before the establishment of the playgrounds there was much complaint, as there is in every place regarding the children disturbing the neighbors by running over the lawns, breaking down the fences and in other ways becoming a nuisance. Then the playgrounds were planned, and at last the Board of Education saw their way clear to establish them. It was one of the best investments ever made of school money. According to the best educators in the country to-day, the physical as well as the mental welfare of the pupils should be looked after. At each of the city schools of the lower grades apparatus has been erected, and it is safe to say that no children in the State more thoroughly enjoy their hours of recreation than do the children of this city. When first established some of the parents were prone to look upon the experiment with fear for the safety of the children, and some went so far as to forbid their children to play on the bars or swings. Their fear soon wore away, and now there are very few of the stunts that are not attempted by all the children under the supervision of the teachers, who seem to enjoy seeing the play as much as those who indulge in it.

Mount Vernon Buys Land

Mount Vernon, N. Y.—The Mount Vernon Board of Aldermen have voted to purchase the property north of the rails of the New York, New Haven & Hartford Railroad and adjoining North Fourth and Fifth and Stevens avenues for a civic center, together with other property adjoining, on which is to be erected a police station and court house. The scheme includes a park, a city hall to cost \$300,000, a police building for \$90,000, a hospital now in course of construction, for \$80,000; a theater, representing an investment of \$300,000; the extension of North Fifth avenue, and a bridge across the New Haven railroad tracks. It is estimated the total cost will be over a million dollars.

Simplifying Street Names

Chicago, Ill.—The council committee on street nomenclature has evolved a plan which is expected to put an end to the considerable confusion and delay now existing in the handling of mails and which might well be adopted by large cities in general. There are nearly 700 duplications of street names and the committee proposes to hold meetings for the purpose of obtaining suggestions of new names that will not only abolish duplications but that will be pronounceable by the rank and file of citizens. It is planned to eliminate names which are difficult to spell or pronounce.

Plan a Beauty Campaign

Denver, Col.—The Real Estate Exchange is now preparing to inaugurate its campaign for making the residence districts of Denver more beautiful than ever this year. This campaign will be extended not only to private residences and grounds, but to vacant lots and alleys. An effort will be made to keep all the vacant lots in the residence districts clear of weeds and rubbish and the dumping of tin cans and other inartistic decorations in alleys and back yards will be discouraged. The exchange had a special committee in charge of this work last year, and encouraging results were obtained in many sections of the city. A similar committee will be named this year, and an effort will be made to arouse friendly rivalry among the residents of different districts in the beautifying of their grounds.

Plan to Build Model City

Los Angeles, Cal.—Equal division of the fruits of labor is to be the chief object of a model city, where it is claimed the cost of living and amusement will be reduced more than one-third, that is planned by a number of German residents who are now collecting a fund with which to purchase a tract of land on which the scheme is to be launched. The society promoting the plan is the Co-operative Fellowship of Los Angeles, and is the first of its kind to be organized on the Pacific Coast. The primary step of the organization as explained by Secretary Max Guenther recently, includes the purchase of a tract of land near Los Angeles where the industrial and residence center is to be established. Upon this land is to be built a city composed of workers, each of which will have an equal opportunity of sharing in all profits from all of the co-operative places of business that are to be established. These co-operative stores will include every necessity of life, including all foodstuffs, fuels and clothing, which is to be sold at a price that covers only the cost and maintenance of the establishments. The third step in the organization of the city is the establishment of a bank. This institution will be opened on the plan of a scrip or money paying basis, and the scrip is to be negotiable at any of the community stores, and all profits of the institution are to be applied in the conduct of the community stores. All real estate is to be held by the corporation during its existence, regardless of the improvements that are made thereon, and will be placed in the hands of the members only on lease for a stated period. Any member becoming dissatisfied with his holdings may sell the improvements, but the land immediately reverts to the fellowship. In every way the commission man or middleman is to be eliminated. At the outset the principal co-operative establishments that are to be conducted include a general store, warehouse, laundry and restaurant, which includes the greatest necessities of the community. Another feature of the settlement is to be a social center in which not only educational advantages will be offered but all forms of amusement as well.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Ruling of Interest to Municipalities

Pollution of Streams—Liability for Damages

Colbert v. City of Ardmore.—Where a municipal corporation discharged sewage in a creek, polluting the waters of the stream and causing it to become foul and impregnated with noxious and poisonous substances which are offensive to the smell and a menace to the health of persons living or working in that vicinity, rendering it impossible for plaintiff and his tenants to cultivate his adjacent land, and rendering the same less valuable, thereby creating and maintaining a nuisance, such corporation is liable in damages for the maintenance of such nuisance.—Supreme Court of Oklahoma, 122 P. R., 509.

Injuries to Servant—Negligence of Master

Richardson v. City of Spokane.—Where an employer engaged in constructing a concrete bridge so placed a gang of carpenters constructing forms for the piers and arches as to render the work of the concrete men manifestly dangerous and failed to warn the concrete men of the danger or to take any measure for their protection from falling objects, injury to a concrete man by the falling of a peavey negligently stuck between the lagging or strips in the floor of an arch by a carpenter proximately resulted from the negligence of the master, and he was liable.—Supreme Court of Washington, 122 P. R., 330.

Sewer Assessment—Validity

Rogers et al. v. City of Salem.—Land drained by an existing sewer constructed by the State may not be assessed for the construction of a new sewer, where no benefits to the land are derived therefrom.—Supreme Court of Oregon, 122 P. R., 308.

Aldermen—Misconduct in Office

State ex rel. Ryan v. Board of Aldermen of Town of Conrad.—An alderman, by Rev. Codes, declared an officer of a town, and so removable from office by a two-thirds vote of the council on charges against him, is guilty of misconduct in office, by Const. Art. 5, made ground for removal, by acting as attorney for one accused by the town of failing to pay an occupation license fee, and by accepting a retainer as an attorney to prosecute a suit against the town for damages and injunction in regard to a sewer; he thus, though acting in good faith, placing himself in a position disqualifying him from acting as alderman in any matter concerning such litigation.—Supreme Court of Montana, 122 P. R., 569.

Annexation—Constitutional and Statutory Provisions

McKeon et al. v. City of Portland et al.—The city of Portland was chartered by an act approved January 23, 1903, and the adjoining city of St. Johns was created in 1907 by its legal voters under the sanction of Const., which exempted its charter from any direct change or destruction by the Legislative Assembly. Held, that an attempted annexation of the city of St. Johns to the city of Portland by a proceeding under chapter 1 of the Portland charter, consisting of a petition to annex territory exactly coincident with the municipal limits of the city of St. Johns with submission of the question to the voters of that territory, and its adoption by a majority of the voters, was ineffectual; the city of St. Johns having no power to change or repudiate its municipal functions.—Supreme Court of Oregon, 122 P. R., 291.

Contracts to Supply Power—Discriminations

President and Trustees of Village of Kilbourn City v. Southern Wisconsin Power Co.—Public utilities act, as added by Laws 1907, forbidding any public utility to charge a greater or less compensation for any service than is specified in filed schedules, and prohibiting unjust discriminations, is applicable to a contract by a public service corporation to supply electric power, made before the completion of its plant, and a contract so entered into to supply power to a village free of charge is in violation of the statute, as providing for an unjust discrimination.—Supreme Court of Wisconsin, 135 N. W. R., 499.

Sewers—Governmental and Ministerial Capacity

City of Logansport v. Newby.—In ordering the construction of a sewer a city exercises its governmental power as to which it cannot be held responsible for negligence, but the actual construction is ministerial in character, and the municipality may be held for injuries from a failure to do the work in a proper manner, or from improper maintenance.—Appellate Court of Indiana, 98 N. E. R., 4.

Street Improvements—Release of Lien

Lehman et al. v. City of Goshen.—Burns' Ann. St. 1908 provides that the city shall be liable to the contractor for the contract price of street improvements to the extent of moneys actually received by it from the assessments, and the owners of abutting property shall be liable to the city for their proportion of the cost, and requires the duplicate assessment roll to have an appropriate column in which payments may be credited, and provides that all assessments shall be paid to the treasurer, who shall give receipts and enter credits in satisfaction on the duplicate assessment roll. Held, that a city did not release its lien for assessments for sidewalk improvements by advancing money for constructing the sidewalk, and could collect unpaid assessments from the property owners.—Supreme Court of Indiana, 98 N. E. R., 1.

Purchasing—Contracts—Liability

Gate City Lumber Co. v. City of Montesano.—When lumber was sold to a contractor for use upon a city contract, and was actually delivered at the place where the work was in progress, the city was liable for the purchase price, where no bond for the protection of materialmen was taken by the city, as required by statute, though the teamsters who hauled the lumber were employed by the contractor.—Supreme Court of Washington, 122 P. R., 26.

Widening Streets—Change of Grade

People ex. rel. City of New York v. Dickey et al.—Claimant owned certain property, extending from F avenue to Third avenue, which sloped decidedly toward the latter avenue, the difference between the grades being from 17 to 22 feet. The width of F avenue was increased from 50 to 60 feet by taking 10 feet from claimant's property, and thereby that portion of claimant's property which abutted on the widened street was left some 7 feet below the grade of the street, which remained substantially as it had been, the grade established when the street was originally laid out differing from the physical surface as it had previously existed since 1871 by less than 6 inches. Held, that whatever injury claimant suffered was due to the widening of the street and not to any change in the grade, and hence she was not entitled to an award by the change of grade commissioners, whose authority was limited by Laws 1894 to the award of damages caused by change of street grade.—Supreme Court New York, 134 N. Y. S., 402.

Viaducts Over Railroads—Damages

Phoenix Mut. Life Ins. Co. v. City of Lincoln et al.—By the statutes of this State railroad companies, when they lay their tracks over and across public streets or highways, are charged with the duty of restoring such streets or highways to their former usefulness; and that duty is not discharged when a street or highway is restored to its proper condition at the time the railroads are constructed. The duty is a continuing one, and embraces such alterations and improvements as may afterward be made necessary by the growth of the city and the increased travel. Railroads may be required, when necessary, to construct viaducts over and across their tracks, and are liable for damages to any person whose property is injured by such construction.—Supreme Court of Nebraska, 135 N. W. R., 444.

Injury to Servant—Negligence—Evidence

Brady v. City of New York et al.—Proof that a servant of a contractor of a city making an excavation in a street, employed to line a sewer in a place prepared for him by the excavation, was injured by a caving in of the excavation caused by an explosion of gas from pipes in the excavation or by defective timbers, did not, under the rule of *res ipsa loquitur*, establish the actionable negligence of the contractor, though the servant was entitled to have due preparation for his work in the support and inspection of the pipes and the maintenance of suitable timbers.—Supreme Court of New York, 134 N. Y. S., 305.

THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals.

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles, where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

ROADS AND PAVEMENTS

Highways. Duty of the Nation with Reference to Building. By J. T. Ronald. 4 pp., Better Roads, May. 10 cts.

Work of the Office of Public Roads. By L. W. Page. 12 pp., Better Roads, May. 10 cts.

Office of Public Roads and Its Offer of Free Engineering Service. By R. M. Walker. 10 pp., Proceedings Engineering Association of the South, March. 50 cts.

Roads Improvement Association. Annual Report. 2 pp., Surveyor, April 19. 40 cts.

Pennsylvania's Good Roads Campaign. Illustrated, 2½ pp., Clay Worker, April. 25 cts.

Proposed Cross State Highway in South Dakota. By S. H. Lea. 2½ pp., Good Roads, April 6. 10 cts.

Bituminous Road Work in the District of Columbia. By L. R. Grabill. Illustrated, 4½ pp., Good Roads, April 6. 10 cts.

Annual Review of Road Building in the United States. 17 pp., Good Roads, April 6. 10 cts.

History of Road Building in the United States. 3½ pp., Good Roads, April 6. 10 cts.

Highway Laws of the United States. 8½ pp., Good Roads, April 6. 10 cts.

The Cumberland Road—Old National Pike. By M. O. Eldridge. Illustrated, 6 pp., Better Roads, May. 10 cts.

Pavements of Lincoln Park, Chicago. By A. S. Lewis. Illustrated, 6 pp., Good Roads, April. 10 cts.

Meadow Boulevard to Atlantic City. Illustrated, 2 pp., Municipal Engineering, April. 25 cts.

Construction and Maintenance, Road. Informal discussion before American Society of Civil Engineers. 24 pp., Proceedings, March. \$1.

Road Making. Paper before Saskatchewan Association of Municipalities. By U. B. Ayles. 1½ pp., Western Municipal News, April. 10 cts.

Instructions to Young Engineers on Highway and Bridge Work. From Manual of Illinois Highway Commission. 1-3 pp., Engineering News, April 25. 15 cts.

Permanent Improvement of Country Roads. By F. C. Finkle. Illustrated, 6 pp., Pacific Municipalities, March 30. 20 cts.

Broken Stone in Road Construction. Depth of stone should vary with sub-soil and traffic. 2 pp., Contract Record, April 24. 20 cts.

Transporting Materials for Road Work. By D. J. Hauer. Illustrated, 2 1-2 pp., Contractor, April 1. 20 cts.

Estimating Costs of Road Work. By J. Eastwood. Illustrated, 2 pp., Surveyor, March 29. 40 cts.

Fundamentals of Highway Engineering. By A. H. Blanchard. 2 pp., Contract Record, April 24. 20 cts.

Surface Treatment of Park Roads. Paper before American Association for the Advancement of Science. By Spencer Cosby. 2 pp., Canadian Engineer, April 11. 15 cts.

Proposals for Dust Suppression and Road Improvement. By Dr. Guglielminetti. 1 2-3 pp., Canadian Engineer, April 18. 15 cts.

Bituminous Material and Road Work. Experience of the South Park Commission, Chicago, with. 1 p., Engineering & Contracting, April 24. 10 cts.

Utility of Coke Oven Tars as Road Materials. From Bulletin, U. S. Office of Public Roads. 1 1-2 pp., Canadian Engineer, April 25. 15 cts.

Effects of Tars and Other Road-Dust Abating Substances on Fish Life. 3-4 p., Engineering News, April 11. 15 cts.

Changes Noted in a Tar Exposed to Traffic and Weathering when Used in a Road Surface. By W. W. Crosby. 1 1-2 pp., Surveyor, April 5. 40 cts.

Bituminous Coated Concrete Pavement. 1-2 pp., Municipal Journal, April 11. 10 cts.

Bitucrete Pavement. By A. E. Schutte.

2 1-2 pp., Municipal Engineering, April. 25 cts.

Sand-Clay Roads. By J. N. Edy. 2 pp., Municipal Engineering, April. 25 cts.

Paving Plans in Baltimore. 2-3 p., Engineering Record, April 6. 10 cts.

Paving in 1911 and 1912. Some additional data. 1 p., Municipal Journal, April 25. 10 cts.

Principles Involved in the Selection of Street Pavements. From Report by Cincinnati Bureau of Municipal Research. 1 p., Engineering & Contracting April 10. 10 cts.

Current Practice in Fixing Pavement Crowns. By D. B. Goodsell. 2-3 p., Engineering & Contracting, April 24. 10 cts.

Street Grades and Street Drainage. By Hobart D. Shaw, city engineer of Gulfport. 2 1-2 pp., American City, April. 15 cts.

London Paving Report. 1-2 p., Municipal Journal, April 11. 10 cts.

Report of New York's Paving. 2 pp., Municipal Journal, April 11. 10 cts.

Report of New York City Pavement. 2 1-2 pp., Good Roads, April 20. 5 cts.

Street Paving Dilemma. Report of Nelson P. Lewis, chief engineer, Board of Estimate, on New York City paving methods. 2 1-2 pp., City Life, April 19. 5 cts.

Amateurs Criticise Pavements. 4 pp., Bulletin of the General Contractors' Association, April.

Prices of Pavements Constructed in 1911 in 400 American Cities. Average Unit. 6 pp., Engineering & Contracting, April 3. 10 cts.

Records of Boston Highway Work. Obtaining figures for calculating itemized costs of street cleaning, sprinkling and oiling. Forms for inspectors and foremen. 2 pp., Municipal Journal, April 25. 10 cts.

Stone Block in a London Borough. 1-4 p., Municipal Journal, April 25. 10 cts.

Concrete Pavements at Ann Arbor. 1 p., Engineering Record, April 27. 10 cts.

Concrete Pavement in Portland, Maine. 1-2 p., Engineering Record, April 13. 10 cts.

Brick, Tests of Paving. 1-4 p., Municipal Journal, April 11. 10 cts.

Strain Measurements of Brick Pavements. Test by U. S. Bureau of Standards. 1 p., Engineering & Contracting, April 24. 10 cts.

Strain Measurements of Brick Pavements. Paper before National Brick Manufacturers' Association. By J. E. Howard. 2 pp., Canadian Engineer, April 18. 15 cts.

Non-Uniformity in Paving Brick. 1-2 p., Municipal Journal, April 18. 10 cts.

Wood Block Paving with Cement Filler. Paper before Illinois Society of Engineers and Surveyors. By A. J. Schafmayer. 1 1-4 pp., Engineering News, April 18. 15 cts.

Construction of Wood Block Pavements. Paper before Wood Preservers' Association. By D. I. Okes. 1-2 p., Canadian Engineer, April 25. 15 cts.

Crescoted Wood Block Pavements of Chicago Loop District. By W. W. Marr. Illustrated, 4 pp., Engineering & Contracting, April 10. 10 cts.

Wood Block Pavements from Construction Standpoint. By D. I. Okes. 1 1-2 pp., Municipal Engineering, April. 25 cts.

Mixer, Portable Track as Adjunct to the Method of handling concrete for street paving base at Portland. Illustrated, 1-2 p., Pacific Builder and Engineer, April 27. 15 cts.

SEWERAGE AND SANITATION

Sewerage, Census Report on. Data from all cities of more than 30,000 population. Amounts and kinds of sewers; maintenance; purification. 1 1-2 pp., Municipal Journal, May 2. 10 cts.

Main Drainage of Glasgow. 2-3 p., Engineering Record, April 6. 10 cts.

Pumping Station, Chattanooga Sewage. Pump well forty-seven feet deep;

motors sixty feet above pumps; alternating current motors automatically controlled; handling large suspended matters in the sewage. Illustrated, 3 pp., Municipal Journal, May 2. 10 cts.

Pipe for Kansas City, Sewer. 1-2 p., Municipal Journal, April 18. 10 cts.

Method of Making Tests on Drain Tile. Paper before National Association of Cement Users. By A. N. Talbot and D. A. Abrams. Illustrated, 1 1-3 pp., Engineering Record, April 6. 10 cts.

Inlets With or Without Catch Basins. 1-2 p., Municipal Journal, May 2. 10 cts.

Catch Basins for Sewer Inlets. Opinions of city engineers as to the desirability of using them. Details of construction. Illustrated, 3 pp., Municipal Journal, May 2. 10 cts.

Grease Traps. Illustrated, 1 1-2 pp., Surveyor, March 29. 40 cts.

Laying Seventy-eight-inch Reinforced Concrete Pipe in Difficult Ground. By F. A. Macallum. Illustrated, 2-3 p., Contract Record, April 24. 20 cts.

Failure of a Concrete Sewer Built on Filled Ground. Illustrated, 1-3 p., Engineering Record, April 27. 10 cts.

Notes, System of Recording Sanitary Sewer, in Use at Dayton, O. By F. O. Eichelberger. Illustrated, 1 p., Engineering & Contracting, April 10. 10 cts.

Sewer Maintenance in New Orleans. 1-4 p., Municipal Journal, May 2. 10 cts.

Methods and Cost of Flushing Sewers. Illustrated, 2 pp., Engineering & Contracting, April 24. 10 cts.

Sewer Flushing. General principles; methods and costs. 2 1-2 pp., Municipal Journal, May 2. 10 cts.

Thawing Out a Frozen 8-inch Pipe Sewer at Beloit, Wis. By R. R. Caldwell. 2-3 p., Engineering News, April 25. 15 cts.

Gases in Sewers. 1-4 p., Municipal Journal, May 2. 10 cts.

Sewage Disposal in Small Cities. Operation of disposal plants in 30 cities of less than 10,000 population; work required for maintenance, and annual cost. Illustrated, 2 pp., Municipal Journal, May 2. 10 cts.

Sewage Disposal at Tonbridge. Opening of new work. Illustrated, 2 pp., Surveyor, April 19. 40 cts.

Residential Sewage Disposal Plants. Paper before Ohio Conference of Boards of Health. By R. W. Pratt. Illustrated, 3 pp., Municipal Engineering, April. 25 cts.

Sewage Purification Plant at Ligonier. Illustrated, 1 2-3 pp., Engineering Record, April 20. 10 cts.

Construction Cost of the Sewage Purification Works at Washington, Pa. By D. M. Belcher. 1 1-2 pp., Engineering News, April 11. 15 cts.

Exminster Sewage Works. Paper before Institution of Civil Engineers. By H. G. Hoskings. Illustrated, 1 1-2 pp., Surveyor, April 19. 40 cts.

Worcester's Sewerage and Sewage Disposal. Municipal force for construction and maintenance; operation of sand filters; experiments with Emscher tank and deep sprinkling filters; results obtained. Sewerage statistics arranged in standard form. Illustrated, 6 pp., Municipal Journal, May 2. 10 cts.

Heywood Sewage Purification and Refuse Destructor Works. By R. J. McKenn. Illustrated, 1 1-2 pp., Surveyor, April 19. 40 cts.

Sewage Disposal at Galion. Illustrated, 2-3 p., Engineering Record, April 13. 10 cts.

Maintaining Small Disposal Plants. 1-4 p., Municipal Journal, May 2. 10 cts.

Indiana Sewage Purification Plants. 2-3 p., Municipal Journal, May 2. 10 cts.

Sewage Disposal Plant for Attaining a High Degree of Purification. Illustrated, 2 1-3 pp., Engineering Record, April 6. 10 cts.

Chemical Disinfection of Sewage. Large scale experiments on use of hypochlorites; municipal plants now in use; Results in detail at Rocky Mount, N. C.; description of a New Jersey plant; advantages and disadvantages. Illustrated,

3 pp., Municipal Journal, May 2. 10 cts.
 Electrolytic Sewage Treatment. 2 1-2 pp., Canadian Engineer, April 25. 15 cts.
 Disposing of Sewage Sludge. Sludge presses, centrifugal drying machines, burial, lagooning. 1-2 p., Municipal Journal, April 18. 10 cts.
 Uses of the Great Lakes. From paper before Western Society of Engineers. By R. R. McCormick. 1 p., Engineering News, April 11. 15 cts.
 Sanitary Works in Uruguay. 1-4 p., Municipal Journal, April 18. 10 cts.
 Health Board's History. The Health Board of New York City. 3 pp., City Life, April 26. 5 cts.
 Sanitary Legislation and Education. Paper before Royal Sanitary Institute. By H. P. Boulnois. 1 1-2 pp., Surveyor, April 5. 40 cts.
 Municipal Ordinances, Rules and Regulations Pertaining to Public Hygiene. 5 pp., Public Health reports, April 19; 5 pp., April 5; 5 pp., April 12.

WATER SUPPLY

Water Works, An Inexpensive. Water from irrigation canal clarified in settling basins, pumped to tank by oil engines, and distributed through pipes two inches to ten inches diameter; itemized cost. By E. P. Bailey. Illustrated, 1 2-3 pp., Municipal Journal, April 18. 10 cts.
 Municipal Work at Ottawa. Reinforced concrete bridge, new aqueduct and intake pipe. By N. J. Ker, city engineer. Illustrated, 3 pp., Contract Record, April 24. 20 cts.
 Condensed Report of the Water Works of Battle Creek, Mich., for 1911. 1 p., Engineering News, April 11. 15 cts.
 Works for the Water Supply of Birmingham from Mid-Wales. Paper before Institution of Civil Engineers. By E. L. and W. L. Mansergh. 3-4 p., Surveyor, April 12. 40 cts.
 Bury Water Works Undertaking. Illustrated, 1 1-2 pp., Surveyor, March 29. 40 cts.
 Vallejo's Municipal Water System. Illustrated, 3 1-2 pp., Pacific Municipalities, March 30. 20 cts.
 Rural Water Supply System at Coldstream, B. C. By J. C. Kennedy. 2 pp., Contract Record, April 3. 20 cts.
 The Welch Water Works for the Supply of Birmingham, England. 2-3 p., Engineering Record, April 27. 10 cts.
 Research of the Metropolitan Water Board. Report by Dr. A. C. Houston. 1 3-4 pp., Surveyor, April 5. 40 cts.
Water and Disease. By A. C. Houston. Illustrated, 6 1-2 pp., Water, April 15. 25 cts.
 European and American Water Supplies and Typhoid Death Rates. From paper by Dr. A. J. McLaughlin before Illinois Water Supply Association. 1 1-2 pp., Engineering News, April 18. 15 cts.
 Value of Pure Water. By C. B. Burdick. 1 p., Fire and Water, April 10. 10 cts.
Tropical Water Supply and Study of Filtration at Panama. Some Notes on. Discussion by H. K. Higgins. 6 pp., Journal, New England Water Works Association, March. \$1.00.
Dam, New Kensico. By A. G. Flinn. Illustrated, 7 1-2 pp., Engineering News, April 25. 15 cts.
 Progress in Types and Design of Dams. By Bertram D. Dean. Illustrated, 2 3-4 pp., Pacific Builder and Engineer, April 20. 15 cts.
 Failure and Repair of the Winston, N. C. Water Works Dam. By J. M. Ambler. Illustrated, 2 1-2 pp., Engineering News, April 11. 15 cts.
 Construction of a Concrete Dam at Portland. Paper before National Association of Cement Users. By H. V. Schreiber. 4 pp., Contractor, April 15. 20 cts.
Reservoir at Suffern, N. Y., Enlarging of Reinforced Concrete. 1 p., Engineering & Contracting, April 10. 10 cts.
 Circular Reinforced Concrete Reservoir Construction. From paper before New England Water Works Association. By Alex. Potter. 2-3 p., Fire and Water, April 10. 10 cts.; 1 p., Engineering News, April 25. 15 cts.
 Main Supply Reservoir at the Presidio, San Francisco. Illustrated, 1 p., Engineering Record, April 13. 10 cts.
 Relining a Brick Lined Reservoir with Concrete. Illustrated, 1 1-3 pp., Engineering & Contracting, April 3. 10 cts.
Wells at Clinton, Ia., Pitometer Survey of Artesian. Illustrated, 1 p., Engineering News, April 11. 15 cts.
Pumping Station Costs, Philadelphia Water Works. Communication from J. C. Troutwine, Jr. 1-2 p., Engineering News, April 18. 15 cts.
 The Selection of Pumping Units for Water Works Service. Paper before the Municipal Engineers of the city of New

York. By N. F. Hill. 2 pp., Engineering & Contracting, April 24. 10 cts.
Aqueduct, Municipal Progressiveness and the Los Angeles. By Burt A. Heinly. Illustrated, 3 pp., American City, April. 15 cts.
 A Ditch in the Desert. Popular description of the Los Angeles aqueduct. By E. Roscoe Shrader. Illustrated, 14 pp., Scribners, May. 25 cts.
 The Deepest Siphon Tunnel in the World. Popular description of the Hudson River siphon of New York's Catskill Mountain supply. By Robert K. Tomlin, Jr. Illustrated, 10 pp., Scribners, May. 25 cts.
Purification by Ozone. By R. M. Leggett. 1 p., Canadian Engineer, April 11. 15 cts.
 Siemens-de Frise Ozone Purification Process. Illustrated, 9 1-2 pp., La Technique Sanitaire, April. 60 cts.
 Water Sterilizing Plant at St. Petersburg. By C. Van Langendonck. Illustrated, 2-3 p., Fire and Water, April 10. 10 cts.
 Hypochlorite Sterilization and Typhoid at Kansas City, Mo. Paper before Illinois Water Supply Association. By W. M. Cross. 2-3 p., Engineering News, April 25. 15 cts.
 Water Purification at Trenton. Use of calcium hypochlorite for temporary treatment; description of plant. By H. C. Hottel, city chemist. Illustrated, 1 1-2 pp., Municipal Journal, April 18. 10 cts.
 The Duyk Process of Sulphate of Alumina and Chloride of Lime Treatment. Report to the city of Marseilles. By O. Arnaud, Ch. Fabry and Prof. Moitessier. Illustrated, 3 pp., La Technique Sanitaire, April. 60 cts.
 Reinforced Concrete for Hypochlorite Solution Tank. Paper before National Association of Cement Users. By W. M. Cross. 1 p., Canadian Engineer, April 18. 15 cts.
 Testing the Bacterial Efficiency of Hypochlorite Treatment. By C. P. Hoover. 2-3 p., Engineering Record, April 20. 10 cts.
 Albany Water Filtration. Preliminary rapid and secondary slow sand filtration; methods and results last year; cost and efficiency of double compared with single filtration; control of sand bed clogging. Illustrated, 4 pp., Municipal Journal, April 11. 10 cts.
 Mechanical Filtration Plant at Fargo, N. Dak. 1-2 p., Engineering Record, April 20. 10 cts.
 Minneapolis Mechanical Water Filtration Scheme. By A. W. E. Fawkes. Illustrated, 4 1-2 pp., Canadian Engineer, April 11. 15 cts.
 Cost of Filtering. From paper before Cleveland Engineering Society. By R. W. Pratt. 1-2 p., Municipal Journal, April 18. 10 cts.
 New Filter Gallery at Des Moines. Illustrated, 2 pp., Engineering Record, April 27. 10 cts.
Water Testing Device, New. 2 pp., Canadian Engineer, April 18. 15 cts.
Management of Water Plants. By W. J. Spaulding. 1 1-3 pp., Fire and Water, April 10. 10 cts.
 Water Works Operation in Springfield. Paper before Illinois Water Supply Association. By W. J. Spaulding. 1 p., Engineering & Contracting, April 3. 10 cts.
Water Waste in Philadelphia. 2-3 p., Fire and Water, April 17. 10 cts.
 Water Waste Surveys in Milwaukee, Wis. From Bulletin of the Bureau of Economy and Efficiency. 1 1-2 pp., Engineering & Contracting, April 24. 10 cts.
Meters, Accuracy of. 1-3 p., Municipal Journal, April 18. 10 cts.
 How Meters Promote Equity and Economy in the Distribution of Water. By W. J. Chellow. 3 pp., American City, April. 15 cts.
 Water Meters, Mains and Service Pipes from a Financial Standpoint. Paper before Illinois Sanitary and Water Supply Association. By W. J. Spaulding. 2 pp., Municipal Engineering, April. 25 cts.
 Some Things Domestic Meters do not Accomplish. By W. S. Johnston. 20 pp., Journal, New England Water Works Association, March. \$1.00.
Leakage Tests of 36-inch Cast Iron Pipe at Columbus. By J. H. Gregory. 1 p., Engineering Record, April 20. 10 cts.
Valves, Control Apparatus for Electrically Operated. By W. M. Watkins. Illustrated, 1 1-2 pp., General Electric Review, May. 20 cts.
Corrosion of Iron and Steel Pipe as Found in Service. By W. H. Walker. Illustrated, 33 pp., Journal, New England Water Works Association, March. \$1.00.
Thawing Out Water Service Pipe by Electricity. By D. W. Roper. Illustrated, 12 pp., Journal, Western Society of Engineers, March. 50 cts.

Anchor Ice. Paper before Illinois Sanitary and Water Supply Association. By L. C. Trow. 1 1-2 pp., Municipal Engineering, April. 25 cts.

STREET LIGHTING AND POWER PLANTS

Illuminating Standards, Ornamental Concrete. Illustrated, 2 1-2 pp., Cement and Engineering News, April. 15 cts.
 Some Attractive Concrete Light Posts. Illustrated, 2 pp., Concrete, April. 15 cts.
Gas Industry in the United States for the Year Ending December 31, 1909. From report by C. E. Monroe to U. S. Bureau of the Census. 6 pp., Progressive Age, April 15. 20 cts.
 Illuminating Gas Investigation by the Bureau of Standards. 1-2 p., Engineering Record, April 20. 10 cts.
 Pacific Gas Rate Valuation. By J. C. Bitton. 3 1-2 pp., Progressive Age, April 15. 20 cts.
Electrolysis of Subterranean Conduits, Some Recent Reports on. 2 pp., La Technique Sanitaire, April. 60 cts.
Wiring, Concerning Safe. Paper before Nebraska Electrical Association. By W. Michaelson. 1 1-2 pp., Electrical Review, April 24. 10 cts.
Hydro-Electric Plant, Large Swedish. By J. B. Van Brussel. Illustrated, 3 pp., Power, April 23. 5 cts.
 Largest Hydraulic Turbines in the World. By Arnold Pfau. Illustrated, 5 pp., Engineering News, April 18. 15 cts.
 White River Power Development in Washington. Illustrated, 3 1-2 pp., Engineering News, April 11. 15 cts.
 White River Development of the Pacific Coast Power Company. Illustrated, 4 pp., Engineering Record, April 13. 10 cts.
Power Waterway, Illinois Water. By W. F. Brashears. Illustrated, 4 pp., Public Service, April. 20 cts.
 Construction of Intake and Discharge Works, Northwest Power Station, Chicago. Illustrated, 1 p., Engineering Record, April 6. 10 cts.
Steam Power Plants, Management of. 1 1-2 pp., Power, April 23. 5 cts.
 The Purchase of Coal. Methods of testing. Illustrated, 5 pp., Isolated Plant, May. 10 cts.
 Cost Problem of Commercial Power. By Rulo Klein. Illustrated, 5 pp., Isolated Plant, May. 10 cts.

FIRE AND POLICE

Fire Department, Baltimore. The Manual force, modern equipment and recently installed high pressure system. 2 pp., Fire and Water, April 24. 10 cts.
 Fire and Water Departments of St. Louis. 2 pp., Fire and Water, April 17. 10 cts.
Equipment of German Fire Brigades, Modern. By F. C. Perkins. Illustrated, 2 pp., Fire and Water, April 24. 10 cts.
School, New York Fire Motor. Illustrated, 1 p., Fire and Water, April 7. 10 cts.
High Pressure Fire System, New York Duplex. Illustrated, 2-3 p., Engineering Record, April 6. 10 cts.
Reservoir, Combined Fire Service, and Swimming Pool in California. Illustrated, 2 pp., Engineering Record, April 6. 10 cts.
Protection in New Orleans, Improved Fire. By Louis A. Dodge. Illustrated, 3 pp., American City, April. 15 cts.
Fire Pump Service, Automatic Control Apparatus for Electric. By G. E. Eagar. Illustrated, 2 1-2 pp., General Electric Review, May. 20 cts.
Fire Alarm of To-day. By Geo. R. Babcock, Superintendent Oakland Electrical Department. Illustrated, 7 1-2 pp., Pacific Municipalities, March 30. 20 cts.
Fire Waste, The.—By A. E. Dodson, Superintendent San Diego Fire Department. 3 pp., Pacific Municipalities, March 30. 20 cts.
 Relation of Matches to the Fire Waste. By D. W. Sleeper. 2 pp., Insurance Engineering, April. 25 cts.
 The Pernicious Match. General indifference to the subject; match legislation by States; match ordinances. 28 pp., Insurance Engineering, April. 25 cts.
Fire Insurance, Fire Waste and Fire Protection. 1 p., Fire and Water, April 10. 10 cts.
Ordinance for Small Cities, Model Fire. 5 pp., Pacific Municipalities, March 30. 20 cts.
Police Courts of New York, The. Record of progress in the minor criminal courts. By Frederick Trevor Hill. Illustrated, 8 pp., Century, May. 35 cts.
Pensions, Police and Fire. 1 p., Fireman's Herald, April 20. 5 cts.

GOVERNMENT AND FINANCE

Democracy Tested in Seattle. By John A. Kingsbury. 4 pp., American City, April. 15 cts.

Charter Forms, Relation of, to Municipal Improvements. Opinions of 50 Mayors. 4 pp., American City, April. 15 cts.

Civil Service Efficiency Division, Chicago, Operation of. 2-3 p., Engineering Record, April 13. 10 cts.

Pensioning of City Employees, The. 3-4 p., City Life, March 21. 5 cts.

Public Utilities. Special message of Governor Foss of Massachusetts recommending law regulating utilities. 3 pp., Public Service Regulation, April. 25 cts.

Workings of Wisconsin Commission. By R. V. Johnson. 4 pp., Public Service, April. 20 cts.

Judicial Review of Decisions of Public Utility Board. By M. R. Maltbie. 2 pp., Public Service, April. 20 cts.

Valuing Twenty-one Plants. Valuations by Public Service Commission of State of Washington. 2 pp., Public Service Regulation, April. 25 cts.

Financial Statements of Cities. By U. L. Leonhauser. 8 pp., Government Accountant, February. 15 cts.

Cost Data, Municipal. By C. A. Bingham. 1 1-2 pp., American City, April. 15 cts.

TRAFFIC AND TRANSPORTATION

Street Railway Situation, Detroit. By W. G. Deacon. 4 pp., Public Service, April. 20 cts.

Electric Traction Developments in London. Illustrated, 1 p., Engineering News, April 11. 15 cts.

Unusual Public Conveyances. Illustrated, 1 p., Municipal Journal, April 25. 10 cts.

Interurban Railway Station at Wheaton, Ill. Illustrated, 1 p., Engineering News, April 11. 15 cts.

Subway Route, New, and Progress of Subway Construction in New York. 2-3 p., Engineering News, April 11. 15 cts.

Hoisting Platform Bridging Street. Illustrated, 3-4 p., Municipal Journal, April 18. 10 cts.

Sub-Marine Rapid Transit Tunnel. Surveys for a. From paper before American Society of Civil Engineers. By F. C. Noble. 3 pp., Engineering News, April 11. 15 cts.

STRUCTURES AND MATERIALS

Retaining Wall Results. Some Contradictory. Communication from M. Hirschthal. Illustrated, 1 p., Engineering News, April 25. 15 cts.

Notes and Experiments on Earth Pressures. By J. C. Meem. 16 pp., Proceedings of Engineers' Club, Philadelphia, April. 25 cts.

Concrete Piles. Notes on the Design and Manufacture of. 1 p., Engineering Record, April 6. 10 cts.

Technical Considerations in the Designing, Molding and Driving of Concrete Piles. 1 1-3 pp., Engineering & Contracting, April 3. 10 cts.

Viaduct at Toronto, Weston Road. Concrete. 1 p., Engineering Record, April 20. 10 cts.

Concrete versus Stone Masonry Sea Walls. Communication from G. L. Bilderbeck. Illustrated, 1 1-3 pp., Engineering News, April 18. 15 cts.

Practical Concrete Construction. Arriving at cost figures. By D. V. Moore. 3 1-2 pp., Cement and Engineering News, April. 15 cts.

Measuring Concrete. Report of committee to National Cement Users Association. 2 pp., Cement Era, April. 10 cts.

Proposed Rules for the Measurement of Concrete Construction. 1 p., Engineering & Contracting, April 3. 10 cts.

Proposed Standards for Measuring Concrete Construction. 1 p., Engineering Record, April 6. 10 cts.

Estimating Standards and the Quantity Surveyor. Report of Committee to National Association of Cement Users. 3 pp., Cement Age, April. 15 cts.

Cement, Constitution of Portland. 1 p., Cement Age, April. 15 cts.

Present Status of Iron Ore Cement. 1 p., Engineering Record, April 20. 10 cts.

Present Status of Iron Ore Cement. Abstract of papers before National Association of Cement Users. 3 pp., Cement Age, April. 15 cts.; 3 pp., Cement Era, April. 10 cts.

Sand for Use in Concrete and Cement Mortar. Testing. By C. M. Chapman. 1 2-3 pp., Engineering Record, April 27. 10 cts.

Concrete, Proportioning Gravel. Paper

before Illinois Society of Engineers and Surveyors. By Clifford Older. 2 pp., Municipal Engineering, April. 25 cts.

Report of Committee on Specifications and Methods of Tests for Concrete Materials. Paper before National Cement Users' Association. 2 pp., Cement Era, April. 10 cts.

Permeability Tests of Mortars and Concretes of Different Proportions. Illustrated, 1 p., Engineering & Contracting, April 24. 10 cts.

Testing of Materials Used in Reinforced Concrete. Paper before Society of Architects. By A. A. H. Scott. 4 pp., Surveyor, March 29. 40 cts.

Methods of Patching and Repairing Concrete. From report to American Railway Engineering Association. 1 1-2 pp., Engineering & Contracting, April 10. 10 cts.

Waterproofing Engineering Structures. 2-3 p., Engineering Record, April 6. 10 cts.

Inspection of Waterproofing for Concrete Work. By Jerome Cochrane. 3 pp., Engineering & Contracting, April 3; 4 1-2 pp., April 10. 10 cts.

Labor and Material Prices in 1911 and 1912. 4 pp., Engineering & Contracting, April 3. 10 cts.

Bridges, Secondary Stresses in. From paper before Western Society of Engineers. By A. Reichmann. 1 p., Engineering News, April 11. 15 cts.

Construction and Testing of Reinforced Concrete Arches. By T. P. Branch. 12 pp., Proceedings, Engineering Association of the South, March. 50 cts.

Erecting the Last Span of the Municipal Bridge, St. Louis. 1 p., Engineering Record, April 13. 10 cts.

An Old Iron Truss Bridge. Illustrated, 1 2-3 pp., Engineering News, April 25. 10 cts.

Widening of a Pittsburgh Bridge. Illustrated, 4 1-2 pp., Engineering News, April 11. 15 cts.

Reinforced Concrete Arched Bridge of 328-foot Span Over River Tiber at Rome. Illustrated, 1 p., Engineering & Contracting, April 10. 10 cts.

Capitol Avenue Bridge, Indianapolis. Illustrated, 3 pp., Municipal Engineering, April. 25 cts.

New Walnut Street Bridge in Des Moines, Ia. By W. B. Maxwell. Illustrated, 7 pp., Iowa Engineer, April. 15 cts.

MISCELLANEOUS

Street Cleaning, Census Report on. 1-2 p., Municipal Journal, April 18. 10 cts.

Refuse Destructor, Columbo's. Paper before Ceylon Engineering Association. By C. H. Kilminster. Illustrated, 4 1-2 pp., Surveyor, April 12. 40 cts.

Four Alternate Methods Considered for the Disposal of Garbage, Rubbish and Ashes at Toronto. 3 pp., Engineering & Contracting, April 10. 10 cts.

Garbage Trucks in Atlanta. Illustrated, 1-3 p., Municipal Journal, April 18. 10 cts.

City Planning and Excess Condemnation. 2 pp., American City, April. 15 cts.

The Development of a Great City. By Otto Wagner. Illustrated, 16 pp., Architectural Record, May. 25 cts.

Chicago. Popular description of its governmental and commercial activities. By Henry B. Fuller. Illustrated, 9 pp., Century, May. 35 cts.

Housing for Our Industrial Classes. Better. By Oscar Hasencamp, vice-president, Ohio State Board of Health. 4 pp., Bulletin, Ohio State Board of Health, January-February.

Schools, Open Air. General discussion. By A. F. Foerste. 29 pp., Bulletin, Ohio State Board of Health, March.

Recreation Survey of Milwaukee. By Rowland Haynes. Data concerning recreation conditions among Milwaukee citizens. 29 pp., Playground, May. 25 cts.

Park Benches Make Money. Illustrated, 1-4 p., Municipal Journal, April 11. 10 cts.

Park Fireplace for Picnickers. Illustrated, 1-3 p., Municipal Journal, April 18. 10 cts.

An Automatic System for Lawn Sprinkling in Los Angeles City Parks. By B. A. Heinly. Illustrated, 1 1-3 pp., Engineering News, April 11. 15 cts.

Shade Tree, Greatest Enemy of the. Injury done by curb stone; methods of admitting surface water to tree roots from both sidewalk and roadway; sidewalk and curb gratings; basins for collecting run-off. By Carl Bannwart, Secretary Newark Shade Tree Commission. Illustrated, 2 1-4 pp., Municipal Journal, April 25. 10 cts.

Protection of Shade Trees Against Insects. By A. T. Hastings, Jr., city forester of Jersey City. Illustrated, 3 pp., American City, April. 15 cts.

A Fair Chance for the City Tree. By J. H. Frost. Illustrated, 2 pp., American City, April. 15 cts.

Smoke Emission from Factory Chimneys. New Standard of. Paper before British Association. By D. J. S. Owen. 3 pp., Canadian Engineer, April 18. 15 cts.

Wire Conduits at Westfield, Electric. By H. D. Jackson. Illustrated, 3 pp., Municipal Engineering, April. 25 cts.

Statistics Concerning Cities, Census. 1-3 p., Municipal Journal, April 18. 10 cts.

Harbor Works at St. John, N. B., Proposed. Illustrated, 2 pp., Contract Record, April 10. 20 cts.

Conservation Engineering at the University of Michigan and Engineering Degrees. Communication from J. R. Nelson. 1 1-2 pp., Engineering News, April 11. 15 cts.

Engineers, Code of Ethics for. 1 p., Municipal Journal, April 25. 10 cts.

Advertising by Civil Engineers. 1-2 p., Municipal Journal, April 25. 10 cts.

More Concerning the Degrees Granted by Engineering Schools. 1 1-2 pp., Engineering News, April 11. 15 cts.

Leveling of Copenhagen, The Main. By C. F. V. Boock. 1 3-4 pp., Surveyor, April 19; illustrated, 3 1-2 pp., April 12. 40 cts.

Drafting Room Practise of the Board of Water Supply, New York City. Paper before Municipal Engineers of the city of New York. By C. F. Bell. Illustrated, 2 pp., Engineering Record, April 6. 10 cts.

Contract Work, Organization and Cost in. By R. L. Russell. 4 1-2 pp., Contract Record, April 10. 20 cts.

Credits Based on Contractors' Costs. From article in Banker and Investor Magazine. By W. H. Nye. 2 1-2 pp., Contractor, April 15. 20 cts.

Water Supplies on Construction Work. By D. J. Hauer. 2 pp., Contractor, April 15. 20 cts.

NEWS OF THE SOCIETIES

New York State Conference of Mayors

At the third conference, to be held in Utica June 10, 11 and 12, the following program will be approximately followed:

First session, Monday, 2.30 p. m.: Hon. Frank J. Baker, Mayor of Utica, presiding; address of welcome by Hon. James S. Sherman, Vice-President of the United States; papers by Robert S. Binkerd, secretary of City Club of New York, entitled "Since Everyone Believes in Home Rule for Cities, Why Don't We Have It?" and by Clinton Rogers Woodruff, on "Aldermanic Activities in Municipal Government."

Second session, Monday, 8 p. m.: Hon. Frederick A. Ellison, Mayor of Corning, presiding; papers by George J. Kneeland, director Chicago Vice Commission, on the "Next Steps in Dealing with the Social Evil in Municipalities"; by Prof. Paul H. Hanus, on "Testing the Efficiency of Public Schools," and by Hon. Geo. E. Van Kernen, chairman New York Conservation Commission, on "Solving the Municipal Lighting Problem."

Third session, Tuesday, 10 a. m.: Hon. Francis M. Hugo, Mayor of Watertown, presiding; "Readjusting a City for Greater Efficiency," by Arnold W. Brunner; "Is It Practicable to Discontinue the Emptying of Sewage in Streams in New York State at This Time?" by Geo. W. Fuller.

Fourth session, Tuesday, 2.30 p. m.: Hon. Edwin W. Fiske, Mayor of Mount Vernon, presiding; "A Model Health Department," by Prof. Selskar M. Gunn, Asst. Prof. Public Health, Massachusetts Institute of Technology, and "The End of Poverty in Cities," by Frederic Almy, secretary Buffalo Charity Organization Society. In the

evening, at an informal smoker, Dr. Frederick C. Howe will give an illustrated talk on what European cities are doing in municipal improvements.

Fifth session, Wednesday, 9 a. m.: Hon. Daniel Sheehan, Mayor of Elmira presiding; Delos F. Wilcox will discuss "Street Railway Franchises," and Mayor Brand Whitlock, of Toledo, O., will describe "A New Deal with the Railway Company."

A special effort will be made to bring out discussions on every paper.

Butler County Good Roads Association

The second annual convention was held at Butler, Pa., on April 30. Over 300 were in attendance, including eighty-eight of the ninety-nine road supervisors. President O. W. Stoughton presided. The principal speakers were M. O. Eldridge, United States superintendent of road construction, and Dr. Donald McCaskey. Three sessions were held—two in the morning and a third in the afternoon. The patrol system of road work and the road drag formed the principal topics of the latter speaker's address. He stated that Venango township had 25 drags, which kept all their roads in excellent condition. The officers elected for next year were: President, Oliver W. Stoughton; vice-presidents, A. J. Portman and John Ferguson; secretary, J. Norman Glenn, and treasurer, Edward Ohl.

Southwestern Electrical and Gas Association

The eighth annual meeting was held at San Antonio, Tex., beginning April 25. Papers were read by T. C. Brown, of the San Antonio Traction Company, on "History of Street Railway Development in Texas"; "The Relation of Power Factor to Central Station Costs," by G. H. Cushman, of San Antonio; "A Treatise on the Distribution of Electricity from the Central Station," by A. D. Brinkerhoff, and an address on street cars by J. A. Burney and discussions of questions drawn from the "question box" completed the business sessions of the first day. On Friday R. B. Stichter presented a paper on "The Benefit of the Interurban to the Community"; H. L. Geise discussed the subject of "Theft of Electrical Current and Gas," following which the association voted to have the president name a committee of three to prepare a bill to be presented at the next session of the legislature tending to reduce theft of gas and electricity. E. W. Kellogg, Jr., spoke on the "Relations Between a Public Service Corporation and the Public It Serves."

The closing session was held Saturday morning, at which officers were elected, and it was decided to employ a secretary to devote all of his time to the affairs of the association and maintain regular headquarters at Dallas. The officers elected were: President, Fred Lege, of Galveston; first vice-president, D. G. Fisher, of Dallas; second vice-president, G. H. Clifford, of Fort Worth; third vice-president, W. L. Wood, of Texarkana; secretary, H. S. Cooper, of Dallas, and treasurer, A. E. Judge, of Tyler. In addition, members of the executive committee, finance committee and advising committee were elected. Invitations for the next convention were received from Fort Worth, Temple, Galveston, Shreveport and Corpus Christi, the selection from which will be made by the executive committee. The attendance was about 250. The membership of the association is now about 300.

Calendar of Meetings

May 14-17.
Texas State Firemen's Association.—Thirty-seventh Annual Convention, Austin, Tex.

May 14-17.
National Fire Protection Association.—Annual Meeting, Chicago, Ill.—F. H. Wentworth, Secretary, 87 Mill Street, Boston, Mass.

May 16-18.
Ohio Society of Mechanical, Electrical and Steam Engineers.—Annual Meeting, Pittsburgh, Pa.—F. E. Sanborn, Secretary, Ohio State University, Columbus, O.

May 16-19.
National Good Roads Association.—Convention, New Orleans, La.—Arthur C. Jackson, President, Chicago, Ill.

May 27-29.
Fourth National Conference on City Planning.—Meeting, Public Library, Boston, Mass.—Flavel Shurtleff, Secretary, 19 Congress Street, Boston, Mass.

May 28-31.
American Society of Mechanical Engineers.—Special Meeting, Cleveland, O.—C. W. Rice, Secretary, 29 W. 39th Street, New York City.

June 3-8.
American Water Works Association.—Annual Convention, Louisville, Ky.—John M. Diven, Secretary, Troy, N. Y.

June 4-6.
Michigan State Firemen's Association.—Thirty-eighth Annual Convention, Kalamazoo, Mich.—A. P. Lane, Secretary, Ithaca, Mich.

June 11-12.
Police Chiefs and City Marshals' Association of Texas.—Convention, San Angelo, Tex.

June 10-12.
Mayors Conference of New York.—Third Annual Meeting, Utica, June 10-12.—Mayor C. C. Duryee, President, Schenectady, N. Y.—Wm. P. Capes, Secretary, New York.

June 10-14.
National Electric Light Association.—Annual Meeting, Seattle, Wash.—T. C. Martin, Secretary, 29 West 39th street, New York City.

June 12-14.
Maryland State Firemen's Association.—Twentieth Annual Convention.—Edward Stevenson, Secretary, Lonaconing, Md.

June 17-22.
South Dakota Firemen's Association.—Twenty-eighth Annual Tournament and Convention.—M. H. Mussman, Secretary, Chamberlain, S. Dak.

June 18-20.
Georgia Association of Fire Chiefs.—Annual Convention, Americus, Ga.

June 19-21.
Wisconsin State Firemen's Association.—Annual Convention and Tournament, Reedsburg, Wis.—Fred H. Henry, Secretary, Jefferson, Wis.

June 20-21.
New York State Association of Fire Chiefs.—Annual Convention, Albany, N. Y.—U. G. Lucas, Secretary, Poughkeepsie, N. Y.

June 25-27.
South Carolina State Firemen's Association.—Eighth Annual Convention and Tournament, Rock Hill, S. C.

June 25-28.
American Institute of Electrical Engineers.—Annual Convention, Boston, Mass.—F. L. Hutchison, 33 West 39th St., New York.

June 26-28.
Society for the Promotion of Engineering Education.—Annual Meeting, Boston, Mass.—H. H. Norris, Secretary, Cornell University, Ithaca, N. Y.

July 8-12.
National Municipal League.—Annual Meeting, Los Angeles, Cal.—Clinton Rogers Woodruff, Secretary, 705 North American Building, Philadelphia, Pa.

September 18-19.
New England Water Works Association.—Thirty-first Annual Convention, Washington, D. C.—Willard Kent, Secretary.—Headquarters, Boston, Mass.

September 24-26.
Central States Water Works Association.—Sixteenth Annual Convention, Detroit, Mich.—R. P. Bricker, Secretary, Shelby, O.

November 12-15.
American Society of Municipal Improvements.—Annual Convention, Dallas, Tex.—A. Prescott Folwell, Secretary, 50 Union Square, New York.

PERSONALS

ANDERSON, WM. P., Henry H. Brinkerhoff, M.D., John Connelly, M.D., Counselor Francis H. McCauley, C. Howard Slater and Vreeland Tompkins have been appointed as members of the Mosquito Extermination Commission of Hudson County, New Jersey.

BERRY, W. W., Denison, Tex., has been elected City Engineer.

BEVIER, FRED, Wolcott, N. Y., has been elected Chief of the Fire Department.

BLANK, L. F., Burlington, Ia., has been appointed Chief of the Fire Department.

BOHMANN, HENRY, P., Milwaukee, Wis., has been appointed Superintendent of Water Works.

CONGDON, JOHN P., Boise, Idaho, has opened offices in the Empire Building, Boise, as consulting engineer. Mr. Congdon was formerly supervising engineer for the Oregon Short Line Railroad Company.

EDWARDS, CARR, St. Charles, Mo., has been reappointed City Engineer for a term of two years. He has served as city engineer for the past fourteen years.

HUMPHREY, RICHARD L., M. Am. Soc. C. E., Philadelphia, Pa.; president of National Association of Cement Users, has been elected a member of the Institution of Civil Engineers of Great Britain.

HOEFER, HERMAN W., has been appointed State Architect of New York.

KANALEY D. R., East Syracuse, N. Y., has been elected Chief of the Fire Department.

MOORE, PAUL J., Newark, N. J., has been appointed Chief of the Fire Department.

MURPHY, JOHN M., Leavenworth, Kan., has been appointed Chief of Police.

MARSHALL, FRED G., Waterloo, N. Y., has been appointed Chief of the Fire Department.

MCCARTHY, D. F., St. Albans, Vt., has been appointed City Engineer and Superintendent of Streets, Sewers and Water.

SHERER, JOSEPH P., Milwaukee, Wis., has been appointed Deputy Commissioner of Public Works.

SAWYER, C. ROYCE, Albion N. Y., has been elected Chief of the Fire Department.

VIDETO, THEODORE E., New York City, has resigned as architect of the Department of Parks of the Borough of Manhattan, and will become Superintendent of Building Construction of the Canadian Pacific Railway.

WILLARD, E. G., Burlington, Ia., has been appointed Chief of the Police Department.

WEIRICK, RAY, Des Moines, Ia., has been appointed Landscape Engineer for that city.

ZARTMANN, WM. J., Brooklyn, N. Y., has resigned as General Superintendent of the Park Department and will engage in the practice of engineering and general landscape work in Manhattan. Mr. Zartmann was elected President of the American Association of Park Superintendents last year.

The following Mayors have been elected:

KANSAS.
Abelene—W. D. Nichols.

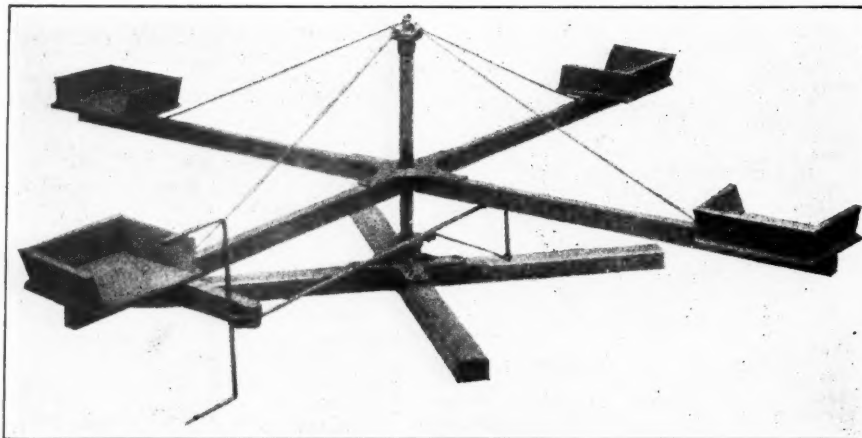
DELAWARE.
Delaware City—Thomas T. Vail.

ARKANSAS.
Waldron—W. Y. Vise.
Rogers—W. F. Rozelle.
Van Buren—J. D. Hawkins.
Hartford—Peter Stewart.

MUNICIPAL APPLIANCES

Playground Equipment

The American Playground Device & Swing Company, Terre Haute, Ind., manufactures a variety of devices suitable for the equipment of public playgrounds. Their line includes coaster slides, ocean waves, teeters and a variety of gymnastic devices. The American Merry-Go-Round shown in the illustration is one of their leaders. It is said to have made a decided hit with park boards and its popularity with the children is apparent by the throngs who await their turns to ride on them wherever they are installed. This piece of apparatus requires no track and is built specially for hard usage. It contains no cogs or gears to get out of order and is said to require no attention after it is installed. The price brings it within the limits or what is desirable for the most simply-equipped ground.



MERRY-GO-ROUND FOR PLAYGROUNDS.

Storage Battery Electric Locomotives for Tunnel Haulage in the New York Aqueduct

Industrial storage battery electric locomotives designed for carrying the load on the locomotive itself have been on the market some few years, but the pioneer locomotives of this type built for hauling trailing loads in tunnel work were put into service only recently in that part of the New York Aqueduct now being constructed for conveying the Catskill water supply into the city, extending from 110th street to Union Square. Locomotives impelled by storage batteries find application at present specifically for short distance hauls at low speeds, where it would not be possible or feasible to install the trolley system, such as over industrial tracks in and around factory buildings, or in places where continual changing of the trolley could not be avoided.

This section of the tunnel is about 11 feet in diameter, concrete lined, and is being driven through solid rock from 250 to 300 feet below the street level. A series of six shafts has been sunk, each approximately a mile apart, for expeditious operation, and the excavated material is transported to the mouths of the shafts on cars drawn by the locomotives, where it is hoisted to the surface. Thus each locomotive has a maximum load haul per trip of half a mile.

Smith, Hauser, Locher & Co., who are executing this contract for the city, re-

cently placed six of these storage battery electric haulage locomotives, manufactured by the General Electric Company, in operation, and have just ordered six additional locomotives. Trolley locomotives were prohibitive because the tunnel headings would not permit their entrance. The operation of the locomotives employed has proved efficient and economical and has permitted laying the tracks without filling, which hauling by mules necessitates. The locomotives in use conform to the following specifications:

Type of motor (single motor) G. E. 1022
Diameter wheels 22 in.
Wheel base 36 in.
Total weight 7,500 lbs.
Length over all 7 ft. 10 in.
Height over batteries 4 ft.
Track gauge 30 in.
Speed at rated T. E. 5 m. p. hr.
The batteries are 44-cell, 21-plate

type and have 45-ampere, 6-hour discharge capacity. The locomotives are equipped with an ampere-hour meter, headlight and gong.

Latest modern practise has been incorporated in the mechanical design. The frame consists of two steel channel sides and steel plate ends carefully fitted at the joints and held rigidly together with bolts and steel angles. A coupler suitable to the type of cars employed is attached at the rear end. Cast steel pedestal jaws, which carry the journal boxes, are bolted to the lower web of the channel side frames.

The cast steel journal boxes are of a special design and are fitted with roller bearings, which assure efficient mechanical transmission of power and consequent economy in battery current consumption. The weight of the car is supported from the journal boxes by two coiled springs.

The wheels are pressed on and securely keyed to the wheel axles. The axles are made of a special grade of steel and are case-hardened at the journals, so that there

is practically no wear either on the roller bearings or on the axles.

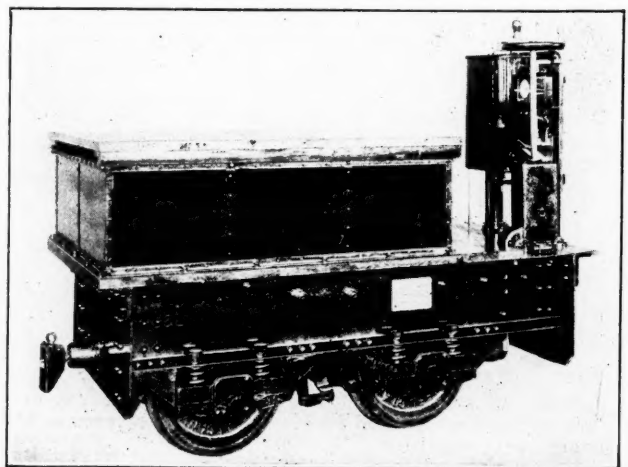
The motor used is of the automobile type, designed especially to operate from batteries, and has characteristics that effect the maximum possible economy in the use of battery current. It has high efficiency, large overload capacity and practically sparkless commutation. The high efficiency is obtained by designing it with a small air gap and running the iron at low densities. On account of the low densities the speed and torque characteristics are steeper than in the ordinary series motor, thereby tending to limit the overload which can be thrown on the battery. The armature shaft rotates in ball bearings, and consequently the friction losses are very slight and the bearing wear is practically negligible. The motor is very compactly designed yet readily accessible for inspection and repair. It is dust and moisture proof and is mounted in a cast steel suspension cradle, one side of which is supported on bearings on the axle, while the other side is spring-suspended from the locomotive frame, in accordance with standard locomotive practise.

The motor drives the rear axle through double reduction gearing, an intermediate shaft, supported in the bearing housing cast integral with the suspension cradle, carrying the intermediate gearing. As slow speed service is ordinarily required of a storage battery locomotive, the use of double reduction gearing permits such speeds without rheostatic losses; and, due to the large gear reduction from armature shaft to wheel tread, very high tractive efforts are obtained at comparatively small current inputs to the motor.

The storage batteries are especially designed for the service, of rugged construction, and have especially made plates with high ampere-hour efficiency. The cells are grouped in four or more trays and are mounted in a sheet iron frame with wooden base and cover on top of the locomotive frame. The battery equipment is governed by individual requirements.

Elevating Truck

The Tapley Specialty Company, 531 West Thirty-seventh street, New York City, have issued a card calling attention to an elevating truck which is designed for use with a set of platforms for handling material of various kinds. In use the truck is run under the platform and the load transferred by raising the platform of the truck so that the stationary platform is lifted from its two supports.



STORAGE BATTERY ELECTRIC LOCOMOTIVE.

Ulrich Shadowless Draughting Table

The Wausau Fixture & Furniture Co., Wausau, Wis., manufacture the Ulrich shadowless draughting table. A system of illumination by means of three incandescent electric lamps beneath the plate glass top is claimed to result in great improvement in the economy, accuracy and rapidity of the draughtsman. The construction is such that it is quickly and easily placed at any angle or height, and is always in perfect balance and rigid and firm. It has a plate glass top with a cork-pine frame to which may be instantly attached with ordinary thumb tacks, shot bags or a special suction device, any class of work of any and various sizes. The surface is as smooth as only plate glass can be, and may be illuminated to any intensity desired. By this means tracings from blue-prints or any kind of drawings, even from plans backed with linen, can be made with perfect accuracy on any kind or thickness of paper. Tracings may be made on Bristol board of a thickness that would make it impossible for tracings by any other method.



SHADOWLESS DRAUGHTING TABLE.

In a crowded office or in the high-rent districts where space is valuable the manufacturers state that it will save its cost many times over in the rent item alone, as any number of men may be placed in any room, regardless of the relative location of windows or other general light. In cases of emergency blue-prints can be made night or day, thereby often saving expensive delays in important work.

It is claimed greater accuracy can be attained by the use of this table than is possible on any other. By inserting a sheet of celluloid under the tracing-paper the point of the compass may be placed at an absolutely correct center and held there, no matter how many times you may have to work from the same center. The hole never wears larger, and the bottom surface being plate glass there is no danger of a point making a new hole as in a soft-wood table.

The shadowless is said to be a great time saver, as no moving about is necessary on the part of a draughtsman to secure a better light. By adjusting a ventilator under the board the temperature may be adjusted so as to dry the ink, so that it is possible to work at once over lines already traced. The shelf on the left hand and the cabinet on the right serve as convenient places for ink, drawing instruments, etc.

INDUSTRIAL NEWS

Cast Iron Pipe.—Chicago: Quotations: 4-inch, \$27; 6 to 12-inch, \$25; 16-inch and up, \$24.50. Birmingham: Pipe makers are busy and a better feeling prevails. It seems probable that the present high state of production will continue throughout the current year. There are an unusual number of large orders on the books. Consequently there is no disposition to shade prices. Quotations: 4 to 6-inch, \$23; 8 to 12-inch, \$22.50; over 12-inch, average \$21.50. New York: No important public lettings are in sight in this vicinity, but private buying continues in fair volume. Quotations: 6-inch, carloads, \$21 to \$23.

Lead.—Market is dull. Quotations: New York, 4.20c.; St. Louis, 4.075c.

Air Compressors.—The American Steam Pump Company, Battle Creek, Mich., is expanding its line of products and will soon place on the market a full line of direct air compressors, both single and two stage. The company's plant is reported to be operating to nearly full capacity in all departments.

Fire Alarm Devices.—The King Fire Signal Company, Millbrook, N. Y., has been incorporated with a capital stock of \$500,000 and will establish a plant for the manufacture of fire alarm devices, etc. W. J. Hildebrandt, Brooklyn, and J. R. Aldrich and G. F. Johnson, New York City, are the directors.

Motorcycles.—The Hendee Manufacturing Company, Springfield, Mass., manufacturer of motorcycles and motors, will erect an addition to its works consisting of two stories on top of a three-story building 40 x 88 ft. A boiler house and storehouse will be built later.

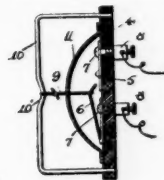
Holophane System of Illumination.—The Holophane Company and the Fostoria Glass Specialty Company have been consolidated into one organization, to be known as the Nelite Works of the General Electric Company, with headquarters in Cleveland, Ohio. The factories will remain in Fostoria and Newark for the present. The removal of sales and accounting departments and the change of name took place April 29.

The General Electric Company is stated to have acquired the Holophane property primarily on account of the strength of the patents under which it operates. As has been repeatedly demonstrated, Holophane patents cover broadly the adaptation of certain prismatic forms for use in gas and electric globes and reflectors. Such seeming evasion or actual infringement of these patents has sprung up within the recent past has continued from lack of rigorous prosecution rather than through any weakness in the Holophane letters patent. Under the new ownership all patents will be strictly upheld, and the trade will be amply protected against the competition of infringement. The change will not in any way interrupt the service of either of the constituent companies; on the contrary, the service will be immediately and immensely strengthened. With a staff composed of the most experienced and competent lighting experts; with a fully equipped engineering department of notable ability; and finally with a complete line of products of great variety and high quality, the new organization is prepared to serve the industry in all matters pertaining to the advantageous use of artificial illumination.

PATENT CLAIMS

1,023,123. FIRE-ALARM. Carl Gerhard Carlson, Chicago, Ill. Serial No. 646,089.

A fire alarm comprising a normally open electric circuit; an alarm device in said circuit; an insulating base member; a contact member on said base member and in said circuit; a spring contact on said base and in said circuit and arranged to contact with said first mentioned contact to close said circuit; a hemispherical casing secured to said base and inclosing said contacts, there being two openings in the top of said



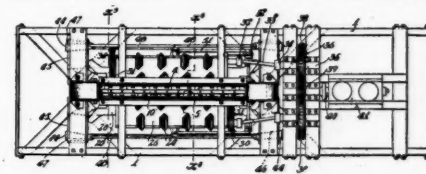
casing; a frame secured to said base member and passing over said casing; and an inflammable cord tied in a loop passing over said frame, under said spring contact and through said openings, substantially as described.

1,024,753. RESILIENT TIRE. Jacob Thissen, Kane, Pa. Serial No. 647,991.

A spring tire, embodying an inner rim provided with a plurality of transversely extending channels, pins projecting outwardly in a radial direction from said rim in said channels, tubes mounted in said channels over the pins and held in the channels, an outer sectional rim, pins projecting inwardly from the sectional rim and working in the outer ends of said tubes, and springs encircling said pins and tubes.

1,021,911. TRACTOR. William S. Boyd, deceased, Los Angeles Cal., by David C. Boyd, administrator. Serial No. 523,550. Renewed Feb. 6, 1912. Serial No. 675,910.

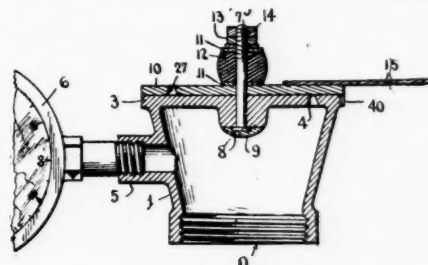
In a tractor, a frame, two series of gripping jaws provided with cable engaging means on their inner faces, said gripping jaws being mounted to move longitudinally of the frame, two members movable laterally on the main frame, traction wheels on said members



engaging the gripping jaws to press said jaws together to grip the cable and to propel the machine forwardly by the engagement of said traction wheels with the jaws, and means for driving such traction wheels, said traction wheels comprising an upper set on each side of the machine inclined inwardly and downwardly, and a lower set on each side of the machine inclined inwardly and upwardly.

1,023,739. METER-TESTER. Roy E. Joyce, Coffeyville, Kan., assignor of one-half to W. H. Shepard, Coffeyville, Kan. Serial No. 641,851.

The herein described meter tester comprising a casing whose bottom has a threaded opening adapted for attachment to the meter and whose top is pierced



with an elongated outlet, a plate movably mounted on said top and pierced with a number of openings adapted to be brought successively over said outlet, a nipple projecting from the casing, and a gage removably attached to said nipple.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage. Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

| STATE | CITY | RECEIVED UNTIL | NATURE OF WORK. | ADDRESS INQUIRIES TO |
|----------------------------|---------------------|---------------------|---|---|
| STREET IMPROVEMENTS | | | | |
| Pennsylvania. | Zelienople..... | May 13, 7 p.m..... | Constrn. 7,000 yds. pav't..... | Street Committee. |
| Ohio..... | Delaware..... | May 13, noon..... | Imp. road with water-bound macadam 1.68 miles; estimated cost, \$7,386.33..... | Jas. R. Marker, State H'way Comm. |
| Pennsylvania.. | Harrisburg..... | May 13 (about).... | Constrn. 6 sections of State road..... | E. N. Bigelow, Comm. |
| Ohio..... | Lisbon..... | May 13, 1 p.m..... | Constrn. 2,300 lin. ft. brick pav't..... | P. R. Walker, County Clk. |
| Oregon..... | Eugene..... | May 13..... | Pav'g. Seventh street..... | City Clerk. |
| Michigan..... | Manistee..... | May 13, 2 p.m..... | Constrn. macadam roads..... | Road Commissioners. |
| Iowa..... | Clinton..... | May 14..... | Pav'g. Fifth avenue..... | City Council. |
| Ohio..... | McConnelsville.. | May 14, 1 p.m..... | Constrn. 1.23 miles water-bound macadam..... | County Commissioners. |
| Ohio..... | Columbus..... | May 14, noon..... | Constrn. crusher bldg..... | W. E. Hazwell, Sec'y Bd. Admin. |
| Pennsylvania.. | Oakmont..... | May 14, 7.30 p.m.. | Constrn. 2,000 yds. pav't..... | Street Committee. |
| Minnesota..... | Redwood Falls.. | May 14..... | Grading and constrn. culverts..... | L. P. Larsen, County Auditor. |
| California..... | Vernon..... | May 14, 2.30 p.m.. | Imp. several roads..... | J. T. Furlong, City Clerk. |
| Pennsylvania.. | Beaver..... | May 14, 8 p.m..... | Constrn. 12,400 sq. yds. paving..... | St. Comm.; Douglass & McKnight, 1702 Union B'k Bldg., Pittsburgh. |
| Ohio..... | Columbus..... | May 15, noon..... | Constrn. culverts and repairing aqueduct..... | A. I. Miller, Ch. Engr. Pub. Wks. |
| Tennessee..... | Dickson..... | May 15, noon..... | Macad. 8 miles of road..... | Dickson Turnpike Co. |
| Arkansas..... | Pine Bluff..... | May 15, 2 p.m..... | Constrn. 25,500 bituminous wearing surface on gravel..... | C. M. Philpot, Chm. Imp. Dist. |
| Georgia..... | Bainbridge..... | May 15, 7.30 p.m.. | Constrn. 22,000 yds. paving..... | J. W. Callahan, Mayor; H. S. Jauden, Engr., Savannah. |
| Michigan..... | Holland..... | May 15..... | Constrn. 1½ miles bit. paving; cost, \$45,000..... | H. A. Naberhuis, City Engr. |
| Ohio..... | Madison..... | May 15 (about).... | Constrn. 2 miles macad. road..... | G. C. Ward, Engr., Painsville. |
| Ohio..... | New Phila..... | May 15, 10 a.m..... | Constrn. 1.55 miles brick road..... | County Commissioners. |
| New York..... | North Tarrytown. | May 15, 8 p.m..... | Constrn. 2,815 ft. brick pav't..... | Wulff Engr. Co. |
| Canada..... | Moose Jaw, Sask. | May 15..... | Constrn. 24,000 yards pavement..... | A. W. Mayberry, Chair. Comm. |
| Kentucky..... | Louisville..... | May 15..... | Constrn. granite block pav't; cost, \$5,000..... | Board Public Works. |
| Kentucky..... | Lexington..... | May 15, 10 a.m..... | Oiling county roads..... | C. F. Estill, Road Supt. |
| South Carolina | Gaffney..... | May 15, noon..... | Constrn. 4,500 sq. yds. concrete sidewalks, 2,000 to 4,000 lin. ft. concrete curb..... | T. B. Butler, Mayor; Lafar Lipscomb, Engr. |
| Arkansas..... | Pine Bluff..... | May 15, noon..... | Constrn. 25,500 sq. yds. bit. surface on gravel..... | F. R. Allen, City Engr. |
| Wisconsin..... | Superior..... | May 15, noon..... | Constrn. road..... | C. J. Morriset, Comr. Highways. |
| New Jersey..... | Paterson..... | May 15, 2 p.m..... | Repair and macadamizing a number of roads..... | G. W. Botbyl, Clk. |
| Texas..... | Palestine..... | May 15, 2 p.m..... | Constrn. 40 miles sand clay roads..... | W. H. Harding, County Judge. |
| Tennessee..... | Johnson City.... | May 16, 7 p.m..... | Constrn. 16,600 yds. paving, curb, drainage, etc..... | T. F. McDonald, City Comm. |
| Minnesota..... | St. Paul..... | May 16..... | Pav'g. several streets..... | Board Public Works. |
| South Carolina | Columbia..... | May 17, 10 a.m..... | Constrn. 1¼ miles macadam with binder..... | W. F. Muller, County Superv. |
| Missouri..... | St. Louis..... | May 17, noon..... | Constrn. a number of roads..... | Board Public Improvements. |
| Alabama..... | Montgomery..... | May 18..... | Grad. and draining 4 miles of road..... | W. S. Keller, Highway Engr. |
| Alabama..... | Athens..... | May 18, 1 p.m..... | Constrn. 7 miles of earth road..... | W. S. Keller, State Engr. |
| Indiana..... | Wayne..... | May 18, 2 p.m..... | Imp. East Haven avenue..... | L. S. Bowman, County Aud. |
| Ohio..... | St. Clairsville.... | May 18, noon..... | Constrn. 2.26 miles Belmont National State highway; estimated cost, \$30,956.75..... | Jas. R. Marker, State H'way Comm. |
| Wisconsin..... | Superior..... | May 18, 1 p.m..... | Constrn. 42,000 sq. yds. pav't, sheet asphalt, asphaltic concrete, bitulithic, brick, sandstone, conc. on creosote block..... | E. B. Banks, City Engr. |
| New York..... | Plattsburg..... | May 20, 7.30 p.m.. | Constrn. 2,190 sq. yds. creosoted wood block pav't..... | H. J. Langlois, City Engr. |
| Minnesota..... | Breckinridge..... | May 20, 10 a.m..... | Constrn. 1½ miles of road..... | P. E. Truax, County Aud. |
| Washington..... | Montesano..... | May 20..... | Imp. State road No. 9..... | R. G. Trask, County Aud. |
| New York..... | Newburg..... | May 20, 5 p.m..... | Resurf. with bitulithic..... | W. J. Blake, Jr., City Engr. |
| Indiana..... | Fowler..... | May 21, 11 a.m..... | Constrn. gravel roads..... | L. Shipman, County Aud. |
| Pennsylvania.. | Harrisburg..... | May 21..... | Constrn. roads by State aid..... | State Highway Comm. Bigelow. |
| Pennsylvania.. | Harrisburg..... | May 21..... | Constrn. 7 miles asphaltic concrete road..... | E. M. Biglow, Comm. Highways. |
| Michigan..... | Hillsdale..... | May 21, noon..... | Constrn. 9,500 sq. yds. asphalt block bit. conc. or conc. base..... | C. L. Heron, City Engr. |
| Alabama..... | Scottsboro..... | May 21, 11 a.m..... | Macad. 2.7 miles road and grading 6.7 miles..... | W. S. Keller, Highway Engr. |
| Alabama..... | Carrollton..... | May 22..... | Constrn. 4 miles of sand clay road..... | W. S. Keller, State Highway Engr. |
| Ohio..... | Cleveland..... | May 22, 11 a.m..... | Imp. canal road No. 2..... | J. F. Goldenbogen, Clk. |
| Ohio..... | Chardon..... | May 22, noon..... | Constrn. 3,960 ft. bituminated concrete; est. cost, \$11,843.28..... | Jas. R. Marker, State H'way Comm. |
| Ohio..... | Jefferson..... | May 23, noon..... | Pav'g. 1.61 miles bituminated concrete; est. cost, \$12,475.67..... | Jas. R. Marker, State H'way Comm. |
| Indiana..... | Fort Wayne..... | May 23, 7.30 p.m.. | Constrn. pav'ts, sidewalks, cross-walks, etc..... | Board Public Works. |
| Alabama..... | Roanoke..... | May 24..... | Constrn. 9 miles sand clay road..... | W. S. Keller, Highway Engr. |
| New York..... | Westfield..... | May 24, 8 p.m..... | Pav'g. with brick..... | J. A. Riley, Vil. Clk. |
| Iowa..... | Clarinda..... | May 28, 7.30 p.m.. | Imp. various sts., 12,300 sq. yds. pav'g., 7,450 lin. ft. curbing..... | C. W. Stuart, City Clk. |
| Rhode Island.. | Providence..... | May 29, noon..... | Constrn. 30 miles State road..... | State Board Public Roads. |
| Ohio..... | Canton..... | June 1..... | Pav'g. Broadway with brick block..... | R. F. Harbent, Dir. Pub. Serv. |
| Louisiana..... | Lake Charles..... | June 4, 8 p.m..... | Constrn. 5 miles of pav't..... | C. B. Richard, Mayor. |
| Ohio..... | Newark..... | June 20 (about).... | Constrn. 8,590 sq. yds. pav't and 4,810 lin. ft. curbing..... | C. H. Wells, City Engr. |
| Oregon..... | Fossil..... | July 3, 1 p.m..... | Constrn. roads and bridges..... | H. F. C. Heidtmann, County Surv. |
| SEWERAGE | | | | |
| South Dakota.. | Highmore..... | May 13..... | Constrn. sewers..... | C. H. Drew, County Aud. |
| Iowa..... | Reinbeck..... | May 13, 7.30 p.m.. | Constrn. 6 miles 8 to 15-in. sanitary sewers & disposal plant..... | R. B. Ferguson, Town Clk.; Iowa Engr. Co., Engrs., Clinton, Ia. |
| Missouri..... | St. Louis..... | May 14, noon..... | Constrn. sewers, Rock Creek sewer district No. 1..... | W. T. Findly, Sec'y Bd. Pub. Imp. |
| California..... | Oxnard..... | May 14..... | Constrn. of several thousand feet of pipe sewers..... | City Trustees. |
| New Jersey..... | Newark..... | May 14, 2 p.m..... | Constrn. 7,270 ft. sewer..... | Passaic Valley Sewerage Comm. |
| Alabama..... | Mobile..... | May 14, noon..... | Constrn. vit. pipe sanitary sewers, 26,000 ft. 8 to 24-in. pipe..... | City Commissioners. |
| Georgia..... | Sylvester..... | May 15, 5 p.m..... | Constrn. 3 miles 8 to 12-in. sewers and septic tank..... | R. B. Pollard, City Clk.; J. B. McCrary Co., Atlanta, Ga. |
| Minnesota..... | Willmar..... | May 15, 3 p.m..... | Constrn. 35,000 ft. sewers and disposal plant..... | Hans Gunderson, City Clk. |
| Wisconsin..... | Appleton..... | May 15..... | Constrn. clay pipe sewers..... | E. L. Williams, City Clk. |
| Maryland..... | Baltimore..... | May 15, 11 a.m..... | Constrn. high level interceptor, mostly c. i. pipe..... | Board of Awards. |
| New Jersey..... | Vetnor City..... | May 15, 8 p.m..... | Constrn. 8,000 ft. 8 to 12-in. clay pipe sewer..... | W. I. Risley, City Engr. |
| Pennsylvania.. | York..... | May 16, noon..... | Constrn. storm water sewer..... | G. A. Warner, Highway Comm. |
| Wisconsin..... | Superior..... | May 16, 1 p.m..... | Constrn. main sewer..... | Board Public Works. |
| Wisconsin..... | Appleton..... | May 17..... | Constrn. sewer..... | E. L. Williams, City Clk. |
| Missouri..... | St. Louis..... | May 19, noon..... | Constrn. Gratiot joint district sewer and branches..... | Board Public Improvement. |
| Michigan..... | Otsego..... | May 20, noon..... | Constrn. number of sewers..... | W. G. Conlan, Vil. Clk. |
| Florida..... | Lakeland..... | May 20, 3 p.m..... | Constrn. sewers and disposal plant..... | C. G. Memminger, Chm. Trustees. |

BIDS ASKED FOR

| STATE | CITY | RECEIVED UNTIL | NATURE OF WORK | ADDRESS INQUIRIES TO |
|---------------------------|---------------------|--------------------|---|---|
| Indiana..... | Michigan City... | May 21, 10 a.m. | Constrn. sewer. | Board Public Works. |
| Virginia..... | Norfolk..... | May 22..... | Constrn. of sewers in several streets. | W. T. Brooks, City Engineer. |
| Indiana..... | Fort Wayne..... | May 23, 7.30 p.m. | Constrn. local sewer. | Board Public Works. |
| Dist. Columbia | Washington..... | May 24..... | Constrn. water & sewer connections at Indian School, Colorado River, Ariz. | Indian Office. |
| Georgia..... | Macon..... | May 28..... | Constrn. 6 miles 8 to 12-in. sanitary sewers. | Bridges Smith, Clk. |
| New Jersey... | Newark..... | May 28..... | Constrn. Section 9, Passaic Valley sewer. | Commissioners. |
| Pennsylvania.. | Ardmore..... | May 28, noon | Constrn. 1,500,000-gal. capacity pumping machinery. | R. A. Warner, Engr. |
| Ohio..... | Canton..... | June 15..... | Extend. storm sewer, Liberty street. | P. H. Weber, City Engr. |
| WATER SUPPLY | | | | |
| Massachusetts. | Holyoke..... | May 13, noon | Constrn. entrance arch for Whiting street reservoir. | Board Water Commissioners. |
| Iowa..... | Reinbeck..... | May 13, 7.30 p.m. | Constrn. extensions. | R. B. Ferguson, Town Clk. |
| Illinois..... | Odell..... | May 13..... | Furn. pumping equipment. | A. W. Joerndt, Pres. Trustees. |
| Ohio..... | Newark..... | May 14..... | Furn. 5,000,000-gallon centrifugal pump. | J. McCarthy, Dir. Pub. Service. |
| Canada..... | Ottawa, Ont..... | May 14, 5 p.m. | Constrn. 2 elec.-operated pump. units, 2,000,000 gal. per min. | Water Works Committee. |
| Oklahoma..... | Wagoner..... | May 14..... | Constrn. electric light plant and water works extensions. | City Clerk. |
| Wisconsin..... | Milwaukee..... | May 15..... | Constrn. 4,000 ft. 12-ft. water works tunnel. | C. P. Dietz, Compt. |
| Canada..... | Vancouver, B. C. | May 15, noon | Furn. 2,000 ft. 18-in. steel pipe and gate valves. | Jas. Stuart, City Purch. Agent. |
| Idaho..... | Salmon..... | May 15..... | Constrn. water works; cost, \$30,000. | F. C. Miller, Con. Clk. |
| New York..... | Fayetteville..... | May 15, 8 p.m. | Constrn. 9,000,000-gal. reservoir and accessories. | W. M. Jones, Pres. |
| Georgia..... | Sylvester..... | May 15..... | Constrn. 4,650 ft. 6-in. c. i. pipe, etc.; furn. air compressor. | R. B. Pollard, City Clk. |
| Canada..... | Halifax, N. S. | May 15..... | Constrn. water works; cost, \$100,000. | F. W. W. Doane, City Engr. |
| New York..... | Olean..... | May 16..... | Furn. 2,000 ft. 8-in. c. i. pipe. | A. E. Homer, Sec'y Water Comm. |
| Pennsylvania.. | Eric..... | May 17..... | Constrn. filter plant, pumping machinery, etc. | Commissioners of Water Works. |
| Michigan..... | Manchester..... | May 17..... | Constrn. of water works system. | W. J. Hofer, Village Clerk. |
| Florida..... | Jacksonville..... | May 20..... | Furn. 2,000 water meters. | Trustees, Water Works. |
| Florida..... | Titusville..... | May 20..... | Constrn. water works. | Geo. M. Robbins, Chm. Bond & Trus. |
| North Carolina | Reidsville..... | May 21, 8 p.m. | Constrn. 5½ miles wood pipe, filter plant and pump. station. | Francis Womack, Mayor. |
| Michigan..... | Grand Haven..... | May 21..... | Constrn. of 3,200 feet of 16-inch suction main. | City Clerk. |
| Texas..... | New Braunfels..... | May 22, 10 a.m. | Constrn. water and lighting plant. | C. A. Jahn, Mayor. |
| Illinois..... | Ashton..... | May 23, 1 p.m. | Constrn. 6 miles 4 to 8-in. mains, tanks, well & pump. mchy. | S. T. Zeller, Jr., Vil. Pres.; Aetna Engineering Bureau, Chicago. |
| Rhode Island.. | Newport..... | May 25, 11 a.m. | Renewing water-piping. | Navy Department. |
| Montana..... | Shelby..... | May 29..... | Constrn. 40,000 ft. 6 and 8-in. wood pipe, 3,000 ft. 8-in. steel pipe, etc. | J. E. Nolan, City Engr. |
| Canada..... | Hamilton, Ont..... | May 30..... | Furn. special castings for pumping station, Ventura meters, cranes, etc. | G. H. Lees, Mayor. |
| Illinois..... | Peoria Heights..... | June 1..... | Constrn. municipal well water system; cost, \$60,000. | Village Clerk. |
| Colorado..... | Aguilar..... | June 1 (about) | Constrn. water works; cost, \$70,000. | City Clerk. |
| Florida..... | Lakeland..... | June 1..... | Constrn. water gas plant, 150,000 cu. ft. capacity. | Lakeland Gas Co. |
| Montana..... | Shelby..... | June 10..... | Constrn. of water works, cost \$20,000. | J. E. Nolan, City Engineer. |
| LIGHTING AND POWER | | | | |
| Pennsylvania.. | Newcastle..... | May 13, noon | Light. streets with arc and incandescent lights. | F. M. Hartman, City Clk. |
| West Virginia. | Wellsburg..... | May 14..... | Constrn. 2 bridges over creeks. | County Comm. |
| Oklahoma..... | Wagoner..... | May 14..... | Constrn. of lighting plant and water works. | City Clerk. |
| Kansas..... | Coffeyville..... | May 14..... | Furn. electrical equipment for water works and light plant. | C. E. Stromquist, Superintendent. |
| Pennsylvania.. | Harrisburg..... | May 14, noon | Furn. 100 lamp posts and install. equipment, including underground wiring system 100 electric lights; also electric current required for light. park system; 10-year contract. | C. A. Disbrough, Pres. Park Comm. |
| New York..... | Schenectady..... | May 15, 1 p.m. | Install. power plant in county building. | County Building Comm. |
| Canada..... | Regina, Sask..... | May 15..... | Furn. luminous arc st. light. equip., light. poles, 100-kw. gen. | City Commissioners. |
| Canada..... | Ft. William, Ont. | May 15..... | Constrn. 50-ton incinerator. | John Wilson, City Engr. |
| Texas..... | New Braunfels..... | May 22, 10 a.m. | Constrn. power plant, lighting system and transmission line. | C. A. Jahn, Mayor. |
| Nebraska..... | New Orleans..... | May 22..... | Constrn. elec. light plant. | C. E. Ford, City Clerk. |
| Louisiana..... | New Orleans..... | June 20, noon | Constrn. power house. | F. S. Shields, Sec'y. |
| FIRE EQUIPMENT | | | | |
| Pennsylvania.. | Johnstown..... | May 13, 8 p.m. | Furn. 2,000 ft. fire hose and fire alarm boxes. | G. W. Wagoner, Pres. Fire Comm. |
| Louisiana..... | Shreveport..... | May 14, 10 a.m. | Furn. 1 auto comb. chemical hose wagon & appurt., 2 auto comb. pump engine hose wagons, 1 tractor, 1 chief's car & equipment, 2,000 ft. 2½-in. rubber-lined double jacket standard fire hose, standard screw couplings attached, 9 non-interfering fire alarm boxes, 1 auxiliary fire alarm box, 1 electric bell striker for 1,400-lb. bell, one 15-in. gong and indicator. | L. H. Baker, Sec'y-Treas. |
| Connecticut... | Bridgeport..... | May 15, noon | Constrn. engine house. | Board of Contract. |
| Ohio..... | Canton..... | May 20 (about) | Furn. equipment for fire department. | Thos. Dunwoodie, Dir. Pub. Safety. |
| Nebraska..... | Kearney..... | May 22..... | Constrn. of electric light plant. | C. E. Ford, City Clerk. |
| Ohio..... | Cleveland..... | May 22, noon | Constrn. fire house. | C. W. Stage, Dir. Public Safety. |
| South Carolina | Florence..... | May 22..... | Furn. 10 fire alarm boxes. | W. H. Perry, Chm. |
| Michigan..... | St. Joseph..... | June 1..... | Furn. 500 ft. fire hose. | H. G. Hughson, Chief Dept. |
| Kansas..... | Wichita..... | June 3..... | Constrn. fire and police telegraph system. | Wm. Sence, City Clk. |
| Louisiana..... | New Orleans..... | June 20, noon | Constrn. power house and canals. | F. S. Shields, Sec'y Water Bd. |
| BRIDGES | | | | |
| Pennsylvania.. | Washington..... | May 15, noon | Constrn. 3 bridges. | J. H. Moffitt, County Compt. |
| Ohio..... | Youngstown..... | May 16, 11 a.m. | Constrn. abutments of bridge, cleaning and painting. | L. M. Hogg, County Aud. |
| Illinois..... | Mascoutah..... | May 16, 10.30 a.m. | Constrn. reinforced superstructure. | G. H. Liebig, City Clk. |
| Pennsylvania.. | Altoona..... | May 21, noon | Constrn. 4 concrete bridges. | County Comm. |
| Tennessee..... | Chattanooga..... | May 27..... | Constrn. McCallie avenue viaduct. | Bridge Commissioners. |
| Tennessee..... | Chattanooga..... | May 27..... | Constrn. steel viaduct. | Robt. Hooke, City Engr. |
| Nebraska..... | Gering..... | May 29..... | Constrn. of bridge, 800 feet long. | J. H. Ferguson, County Clerk. |
| MISCELLANEOUS | | | | |
| New Jersey... | Atlantic City... | May 13, 8 p.m. | Constrn. concrete rest pavilion. | S. S. Phoebus, Chm. |
| New York..... | Long Island City. | May 13..... | Furn. dumps, etc., for final disposition of garbage. | M. E. Connolly, Borough President. |
| Ohio..... | Columbus..... | May 14..... | Building comfort station in park. | S. A. Kinnear, Dir. Pub. Safety. |
| New York..... | Buffalo..... | May 14, 11 a.m. | Furn. fencing, ash cans and school supplies. | F. G. Ward, Comm. Pub. Wks. |
| New York..... | Niagara Falls..... | May 14, 4 p.m. | Furn. portable asphalt plant, kettles, 40 tons asphalt cement and small tools. | T. H. Hogan, City Clk. |
| Montana..... | Helena..... | May 15..... | Furn. 12-ton steam roller. | City Council. |
| New York..... | Schenectady..... | May 15, 1 p.m. | Constrn. jail and residence. | Board of Supervisors. |
| Canada..... | Ft. William, Ont. | May 15..... | Install. 50-ton incinerating plant. | John Wilson, City Engr. |
| New York..... | Schenectady..... | May 15, 1 p.m. | Constrn. county jail. | Bernard A. Farrell, Clk. Bd. Superv. |
| New Jersey... | Newark..... | May 16..... | Constrn. public bath house; est. cost, \$100,000. | Board Street and Water Comrs. |
| Wisconsin..... | Appleton..... | May 17..... | Constrn. concrete retaining wall. | E. L. Williams, City Clk. |
| Minnesota..... | Lesueur Center..... | May 20, 10 a.m. | Bldg. fireproof jail and residence. | J. H. Kaisersall, County Aud. |
| Dist. Columbia | Washington..... | May 21..... | Furn. tandem steam road roller; also 10,000 ft. air hose. | Navy Department. |
| Ohio..... | Dayton..... | June 1, 10 a.m. | Constrn. concrete retaining wall. | J. O. Donovan, Sec'y Bd. Co. Comrs. |
| Indiana..... | Brazil..... | June 4..... | Constrn. court house, including heating plant. | E. A. Staggs, County Aud. |
| Canada..... | Saskatoon, Sask. | June 25..... | Furn. 70-ton incinerator. | City Commissioners. |
| Texas..... | Dallas..... | July 15, 2 p.m. | Constrn. city hall; cost, \$400,000. | City Commissioners. |

STREET IMPROVEMENTS

Montgomery, Ala.—Four thousand dollars will be spent on one road in Butler County. Money has been appropriated by State. State Highway Department will have charge of survey

and road building. Highway will be used as model in central Alabama.

Oxford, Ala.—At meeting of City Council all of plans for paving sidewalks in Oxford were completed. Contract will be let in about 20 days and work started immediately thereafter.

Oxford, Ala.—City Council will pave large number of sidewalks.

Selma, Ala.—Representative citizens from every part of Dallas County have met with Court of County Commissioners for purpose of discussing matters pertaining to building of good roads

throughout county and expenditure of bond issue of \$250,000.

Los Angeles, Cal.—Thousands of dollars will be expended at Brentwood Park within next several weeks in street improvements. High-class boulevards are to be laid in sub-division, replacing roadway that need resurfacing and opening up newer corners of canyon side district on which recent purchasers are to build homes.

Manhattan Beach, Cal.—Sum of \$125,000 may be expended on street improvements in Manhattan Beach.

Nevada City, Cal.—Board of Supervisors has authorized County Surveyor Fred M. Miller to prepare plans and specifications for new stretch of county road from Burckhalters to Iceland, in eastern end of county. Southern Pacific Co. will stand \$3,000 of expense.

Sacramento, Cal.—Five miles of road, running southward from South San Francisco to Burlingame, will be first stretch to be constructed by State Highway Commission under provisions of State highway act, and with part of \$18,000,000 highway bonds, according to announcement made to-day by State Highway Engineer Fletcher.

Meeker, Col.—Efforts looking to rehabilitation of good roads association, which was formed some time ago for purpose of obtaining for Meeker and Rifle macadamized road 45 miles in length, are being made here by some of town's business men, and action on movement is to be had at once. Proposed road will pass through some of most beautiful country on western slope.

Norwich, Conn.—Placing of Hassam pavement in Franklin st., from Bath st. to Grove st., is being discussed.

Wilmington, Del.—Wilmington's Street and Sewer Department has asked Council for \$194,000 for next fiscal year.

Wilmington, Del.—City Council has passed ordinance to borrow \$100,000, of which amount \$50,000 is to cover the cost of widening 11th st., between Market and Orange sts., and balance to be special fund for Street and Sewer Commissioners to use in extending sewer system.

Carbondale, Ill.—Citizens have decided to construct 14 miles of roads.

E. St. Louis, Ill.—Park Board has completed their plans for improvement of Boulevard through northern end of district.

Farmington, Ill.—Matter of street paving is meeting with considerable discussion. Ordinances are being passed making necessary provision.

Peoria, Ill.—Preliminary steps have been taken at regular meeting of Board of Local Improvements to pave Knox-ville rd. as it runs through Mechanicsville from McClure to University, with brick, width of 20 ft. City Engineer has been authorized to prepare estimates for work. Estimates for paving Hurlburt st. in two sections, one from Reed ave. to Saratoga st., and other from Saratoga to Steubenville st., have been presented by City Engineer. First mentioned of these sections will be 40 ft. wide and other 30 ft.

Silvis, Ill.—Paving of First ave., to cost \$62,000, is being discussed.

Evansville, Ind.—Four construction companies entered bids on paving of Iowa st., from Edgar to Garvin, and for improvement of Mulberry st., between Evans and Willard aves., at meeting of Board of Public Works. As property owners desire asphalt as paving material, bids will fall to either Western Construction Co. or Louisville Asphalt Co. Former company entered bid of \$1.95 per sq. yd. for Trinidad Lake asphalt and Louisville company's bid is two cents higher. Bids on brick as paving material were entered by Stinchfield, Reichert & Saunders and Bedford & Nugent.

Evansville, Ind.—Board of Public Works is contemplating paving of Adams ave., Ingle and Eighth sts.

Fort Wayne, Ind.—Engineer Frank M. Randall has been ordered by Board of Works to prepare plans for paving alley between Main and Berry st., from Webster to Ewing st.; paving alley between Creighton and DeWald, from Hoagland ave. to Harrison st.

Indianapolis, Ind.—Noblesville Township Reviewers, who were appointed by Hamilton County Board of Commissioners to report on proposed permanent improvement of that part of Noblesville rd. which lies in Noblesville Township, have reported in favor of improvement and Commissioners will advertise for bids. Petitions for Marion County part of road are in circulation in Washington Township. Petition for improvement of that part of road which lies in Lawrence Township has been filed with County Auditor.

Indianapolis, Ind.—Bids will be received by the Board of Public Works for resurfacing North Alabama st., from Massachusetts ave. to E. Wayne ave.

Indianapolis, Ind.—County Commissioners have opened bids on 200,000 gals. of oil to be placed on main roads of county. Bids were submitted on furnishing and applying of oil by seven companies. About 75 miles of roadway are to be oiled. Commissioners may buy spreader for work and award contract for oil only. Bids were also opened for 205 carloads of broken stone, to be placed on roads in District No. 1 and District No. 2.

Indianapolis, Ind.—Plans for opening 16th st., from Indiana ave. to Emrichsville bridge across White River, have been ordered by Board of Public Works, and City Engineer Klausmann expects to have them ready in a few days. It is board's plan to improve street when opened and to pave Indiana ave., from Montcalm st. to 16th st., in order to afford good roadway to proposed site for Edwards Motor Car Co.'s factory in Crawfordville rd.

Marion, Ind.—Improvement of East 18th st. is practically assured. Petition has been presented to Board of Public Works asking that street be improved with paving of tar binder. City Attorney has been instructed to prepare resolution and specifications for improvement of street. It is to be made driveway between Lincoln blvd. and South Washington st., thus making continuous drive of more than six miles.

Mishawaka, Ind.—Three petitions have been received by Board of Public Works in city hall office of Mayor J. A. Herzog asking for paving of five streets.

Muncie, Ind.—Ordinance has been passed appropriating money for paving with brick of Kilgore ave. and Yorktown pike.

Burlington, Ia.—Laying of about 20,000 sq. yds. vitrified block paving is being discussed. H. G. Vollmer is City Engineer.

Clarinda, Ia.—City Council is contemplating paving of Washington, 18th and State sts. about 12,300 sq. yds. paving and 7,450 ft. curb.

Des Moines, Ia.—County has \$16,570 to spend on country roads adjacent to city of Des Moines. Roads on which bulk of this money is to be spent are Poor Farm rd., Hyperion Club rd., River-to-River rd., Army Post rd. and White Pole rd. to Prairie City. Aside from money that is to be spent on these roads, Supervisor Uhl has \$2,642 to spend in his district, Supervisor Hunter has \$2,864, and Supervisor Fisher has \$2,310. There also is \$2,000 from automobile tax to be spent on one piece of road. Improvements will consist of grading and graveling of portions of these roads.

Des Moines, Ia.—City Council is considering specifications for paving of Woodland and Grand aves.

Iowa City, Ia.—Bitulithic paving on Dubuque, Governor, Gilbert and Bowery sts. has been ordered by Council; also 3½ miles of sewers in east end; cost, \$16,675.

Vinton, Ia.—Council has ordered 18 blocks to be paved.

Lexington, Ky.—At meeting of Joint Improvement Committee of General Council, acceptance of bid of Carey-Reed Co. for furnishing and spreading oil on macadam streets of city was recommended. Bid of Carey-Reed Co. for furnishing and spreading from 50,000 to 100,000 gals. of Ragland crude oil was 3½ cts. per gal. Indian Refining Co. submitted price of \$4.38 per hundred gallons without spreading for their cheapest grade, and of 5 cts. per gal. for asphalt road oil. Committee has also recommended joint resolution declaring construction of West Third st., from Henry to Georgetown st. and Georgetown st., from Third to Charles st., to be a necessity.

Louisville, Ky.—Board of Public Works will construct following: "M" st., from Third to Seventh sts.; 41st st., from Chestnut st. to Broadway; Bismarck ave., from 28th to 30th sts.; Garfield ave., from 28th to 30th sts.; Lee st., from Fifth to Sixth sts.; 21st st., from Howard to Garland ave.; 27th st., from Cedar to Walnut sts., and Market st. Roger G. McGrath, Secretary.

Crowley, La.—It has been decided to use brick for paving of Parkerson ave.

Boston, Mass.—Council has passed on their final readings order appropriating by loan \$300,000 for making of new streets.

Boston, Mass.—Resolution authorizing bond issue of \$32,500 for street paving and brick sidewalks, sewerage and surface drainage has been adopted by Council.

Holyoke, Mass.—State Highway Commission will macadamize Mt. Tom rd. if city will raise grade three ft. Estimated cost to city is \$10,000. Action will probably be taken by city at regular meeting of City Council. Highway Commission offers also to macadamize stretch of road running past Laurel Park to Hatfield town line, providing Northampton will macadamize road from stone crusher to junction with Laurel Park rd.

Lawrence, Mass.—City's share of construction of proposed Lawrence-Methuen blvd., extension of Lowell blvd. from present terminus on Lowell rd. along north bank of Merrimack River to top of Water st., will be 45 per cent. of the total cost and this it is estimated will be in neighborhood of \$25,000. County Commission had figured that extension of boulevard would entail expense of about \$38,000, but later increased estimate to \$60,000.

Lowell, Mass.—Council will consider loan order of \$35,000 for macadam and oiling of streets.

Lowell, Mass.—City Council will consider order of \$76,000 for paving of different streets.

Palmer, Mass.—It has been voted to improve highways of town by laying out more than 10 miles of oiled gravel or macadam road, and sum of \$50,000 has been appropriated therefor. Financing of matter is to be provided for by issuing of coupon registered bonds to amount of \$50,000, bearing interest at 4 per cent., to be known as Palmer highway bonds.

Pocomoke City, Md.—Nearly \$60,000 will be spent in improving streets of Pocomoke City in next 18 months.

Bozoye City, Mich.—Supervisors of Charlevoix County have been petitioned to call special election in June to vote on issue of \$350,000 in road bonds. It is planned that this amount, with sums forthcoming from State by reward system, will build 150 miles of macadam roads.

Detroit, Mich.—Common Council has approved of bond issue of \$100,000 for grade separation.

Grand Rapids, Mich.—Proposal of extending street paving on Plainfield ave., from Quimby st. to Ann or Knapp ave., is being discussed.

Saginaw, Mich.—Board of Commissioners is said to be considering the construction of 40 miles of concrete and gravel roads, to cost about \$175,000.

Chisholm, Minn.—Paving of Lake st. is being considered at cost of \$25,000.

Ely, Minn.—Purchase of steam roller has been authorized.

Hibbing, Minn.—Council has authorized about two miles of paving at estimated cost of wood block, \$130,546; brick, \$116,041.

St. Paul, Minn.—Engineering work will shortly be started by State Highway Commission for construction of automobile road Cook County, making connection for route between Duluth and Port Arthur. Cook County will spend \$62,000 on work, raised by bond issue. Besides doing surveying work, State will supply \$2,500 under old road act. Road from Port Arthur will be built from Port Arthur to boundary line this spring.

Billings, Mont.—Purchase of road grader is being considered by Council.

Tarkio, Mo.—City Council has passed ordinance for new paving district. New paving district will include paving of remainder of Main st., and will put Tarkio in class by herself as far as paving is concerned, having population of only 2,000 and over 2½ miles of paved streets.

Atlantic City, N. J.—City Council contemplates paving of Baltic ave.

Bayonne, N. J.—At meeting of Bayonne City Council final action on Ave. E improvement ordinance will be taken. It is very probably that bids will be ordered advertised for and that in course of three or four weeks at latest actual work of improving avenue will be under way.

Newark, N. J.—Resolution has been adopted for opening of Parkhurst st. M. R. Sherrerd, Chief Engineer.

Newark, N. J.—Resolutions have been adopted for paving of various city streets. M. R. Sherrerd, Chief Engineer.

Paterson, N. J.—Freeholders at their road committee meeting decided to make necessary repairs, so far as means will permit, on large number of roads, located in all sections of county. Total cost is estimated at \$99,603, and repairs will cost all way from \$200 to \$5,000 on various roads.

Perth Amboy, N. J.—At meeting of local Board of Improvement to be held in Borough Hall, St. George, matter of widening Tompkins ave., Centre st. and

Riker st. under name of Rosebank ave., as continuance of Southfield blvd., from its dead end at Grasmere to Stapleton, will be considered.

Trenton, N. J.—Ordinance has been passed to authorize paving of Walklett alley, from Bayard st. to Mott st., with monolithic concrete six inches thick. Harry B. Salter, City Clerk.

Trenton, N. J.—Pending decision on part of City Commissioners as to what material will be used in paving of Parkside ave., curb line and gutters will be laid. This work will shortly be contracted for.

Kingston, N. Y.—Ordinance has been passed for grading and top-dressing and curbing, guttering and flagging Ten Broeck ave., between Albany ave. and O'Neil st.; also for establishing grade and for grading, top-dressing, curbing, guttering and flagging Hasbrouck pl., between Hasbrouck ave. and Highland ave. John T. Cummings, City Clerk.

Lowville, N. Y.—Petition is being circulated among property owners in Dayan st., addressed to Board of Trustees, requesting them to petition State Highway Commission to have Dayan st. paved with bitulithic, forming connection with State highway, which passes through State st., and county highway, running from corporation line on Dayan st. through Harrisburg and Copenhagen to Watertown.

Rochester, N. Y.—County Attorney G. Y. Webster has advised Greece Town Board to reject bids for highway improvements Nos. 36 and 37.

Saratoga, N. Y.—Plans are about completed at State Highway Department at Albany for construction of cement base and bituminous top road from village line of Scotia to Schenectady county line near Burnt Hills, which, with road from that point to Ballston Centre and completed road from Ballston Centre to Ballston Spa, will make splendid highway to Ballston Spa and on to Saratoga Springs. With the plans for this new road practically completed bids will be advertised for shortly and opened before end of this month.

Yonkers, N. Y.—Petition has been received to pave Kimball ave. with macadam.

Payetteville, N. C.—Election for \$200,000 bond issue will be held May 14 for good roads.

Winston-Salem, N. C.—County Engineer W. L. Spoon and June Johnson, engineer from High Point, will go over route of High Point-Winston-Salem highway to get necessary data for prospective bidders for construction work.

Cincinnati, O.—City Auditor Washburn is offering for sale \$73,000 street improvement bonds.

Cleveland, O.—Election will be held on May 21 for voting on \$1,000,000 bond issue for public playgrounds, and on \$900,000 bond issue for improving, opening, widening and extending Cedar ave. s.e., Carnegie ave. s.e., Central ave. s.e., Chester ave. n.e., and Perkins ave. n.e. Newton D. Baker is Mayor.

Cleveland, O.—Bids will be received at office of City Auditor until 12 noon, May 10, for purchase of \$450,000 street improvement coupon bonds. Thomas Coughlin, City Auditor.

Dayton, O.—Resolution has been passed authorizing paving of Findlay st., from Fifth st. to First st.

Dayton, O.—Opening and extension of Monmouth st., from Fifth st. to Burkhardt ave., is being considered.

Dayton, O.—Petition received from property owners on Edgewood ave., from Broadway to Salem ave., asking that that thoroughfare be paved, has been referred to Trustee of Fifth Ward, and similar petition from property owners on Terry st., between Third and Second sts., has been referred to Trustee of Second Ward.

Dayton, O.—City Council has passed ordinance for oiling of unpaved streets of city.

Dover, O.—Paving bonds in sum of \$30,500 have been sold.

Findlay, O.—Hancock County Commissioners have sold three road improvement contract, total amount being \$28,985. All specifications call for water bound pike.

Findlay, O.—C. E. Dennison & Co., of Cleveland, have been awarded two issues of road improvement bonds.

Salem, O.—Petitions asking for paving of the Newgarden rd., from city limits to Newgarden st. to Perry Township line, distance of over one mile, are being circulated.

Erie, Pa.—Ordinances have been passed authorizing improving of various streets.

Harrisburg, Pa.—State Highway Commissioner Bigelow has ordered that bids be advertised for construction of River

rd., from this city to Fishing Creek at Fort Hunter. Of six sections of road to be built largest section of highway will be 24,603 ft. in length along National rd. in Washington County.

Newberry, Pa.—Number of petitions have been circulated in Seventh and 11th Wards, which will soon be presented to City Councils, praying for extension of West Fourth st., from its present terminus, at Beeber st., to Arch st., Newberry to intersect eastern end of Fourth st. in Seventh Ward.

Philadelphia, Pa.—Bids have been opened for asphalt street repairs. Bidders were required for first time to base their proposals on real specifications, and prices were regarded as high. The low bid was from new competitor in field, Eastern Paving Co., of which J. F. Swartz is treasurer. This company asked 93 cts. per yd. where foundations are not required to be renewed; \$1.53 where new foundations are required, and for work between tracks, 12 cts. to \$3.50 per yd., according to character of work to be done. The Filbert Co. bid \$1.19 without and \$1.64 with new foundations, and for contingent work 19 cts. to \$3.69 a sq. yd. Barber Co. bid \$1.30 without and \$1.78 with new foundations; contingent work, 15 cts. to \$3.15 per sq. yd. Bids were for work on traction streets, to be paid for out of the \$500,000 paid annually by the Rapid Transit Co. Bids were also received for repairs to non-traction streets. Eastern Co. alone changed its prices on this work, bidding 98 cts. where foundations are not to be renewed and \$1.58 where renewals are required. This work will be provided for out of \$4,225,000 loan.

Prospect Park, Pa.—At meeting of committee composed of three representatives from Norwood and three from this borough, it was decided to begin grading and macadamizing of Amosland ave., which is owned jointly by this borough and Norwood, at once. Bids for work will shortly be advertised for.

Somerset, Pa.—State road leading from Somerset will be extended four miles in direction of Johnstown this summer, according to announcement made by Chief Engineer Foster, of State Highway Department, who is inspecting State roads in Somerset locality.

Gaffney, S. C.—Bids will be received shortly for laying 3,000 to 5,000 sq. yds. concrete sidewalks and 2,000 to 4,000 lin. ft. concrete curbs. T. B. Butler, Mayor. Lafar Lipscomb, Engineer.

Sioux Falls, S. Dak.—Question of paving is being discussed.

Chattanooga, Tenn.—Three blocks of paving bonds have been awarded to First National Bank of Cleveland.

Chattanooga, Tenn.—Arrangements are being made by Chickamauga Park Commission for oiling roads in park during spring.

Knoxville, Tenn.—Paving of Henley st., from Main to Cumberland ave., is being considered by City Commissioners.

Knoxville, Tenn.—John W. Flenniken, Commissioner of Streets and Public Improvements, is now preparing bond ordinance that will be presented to Commission to sell \$15,000 street widening bonds to open Jackson ave.

Knoxville, Tenn.—Knox County Road Commission will make repairs on Dale ave. extension leading to factory district. G. W. Pearsoll, County Engineer, has been instructed to prepare estimate of this work.

Knoxville, Tenn.—J. E. Thompson, City Engineer, is preparing estimate of cost of repaving Gay st. Mr. Thompson's estimate, per yd., follows: Sheet asphalt, \$1.88; best brick, \$2.25; creosoted wood block, \$2.66; sand stone, \$3.50.

Morristown, Tenn.—Bond issue of \$25,000, proceeds of which will go toward repair and maintenance of Hamblen County roads, has been authorized in county election. Road authorities here are planning to expend money largely in widening present turnpikes which extend practically over entire county.

Nashville, Tenn.—Bills have been passed for macadamizing and paving of various streets.

Nashville, Tenn.—Improvement ordinance has been passed for improving Douglas st.

El Paso, Tex.—City Council has decided to pave West San Antonio st., between El Paso and Davis st.

Marshall, Tex.—City Commission has instructed City Attorney to write ordinance to hold bond election for macadamizing residence streets.

Smithville, Tex.—Following were appointed supervising committee to take charge of \$100,000 bond issue and direct building of 60 miles of good roads in this precinct: E. H. Eagleston, Dr. J.

H. E. Powell, V. S. Rabb, Jr., Perry Winston and W. S. Gunter. They will employ expert road engineer and let contracts.

Suffolk, Va.—City Engineer has been instructed to get up specifications, looking to advertising of bids for paving of East Washington st. Brick will be used.

Mt. Pleasant, Utah.—City Council has decided on location of State road through city. It is to run from south into city along Fifth West to Main st. and will be 36 ft. grade there; thence east along Main st. to State st., this portion to be graded entire width of street, and then north along State st. to meet county road. Along State st. there will be two grades, each 20 ft. wide.

Chatham, Va.—Sum of \$30,000 bonds have been issued, \$20,000 for paving and \$2,000 for water meters.

Tacoma, Wash.—Municipal Commission has decided to repave North I st., from Division ave. to North 13th st., thus insuring double tracking of Point Defiance line on street. By vote of three to two Council also voted to pave South Third, Fourth and Fifth sts., from South I to K sts. at once.

Huntington, W. Va.—At important meeting of County Court it was decided to let contracts for paving two miles of new James River rd., and to pave one mile of road with Carolina brick, other with Portsmouth block.

Ashland, Wis.—Sum of \$50,000 will be spent by Bayfield County Board on roads and bridges.

Grand Rapids, Wis.—Purchase of stone crusher and steam roller has been recommended by Mayor Jos. A. Cohen.

Green Bay, Wis.—Petition to have road from city limits at Irwin ave. to bay shore made into boulevard is being circulated among property owners of town of Preble and motor car owners of this city.

Neenah, Wis.—State Highway Commission will start work on May 15 on new road between Twin Cities and Appleton. Highway will be experimental and cost \$7,500. Crushed stone road metal with macadam and mixture of asphalt will be laid.

Superior, Wis.—City will shortly advertise for bids for improving Tower ave., from Third to 16th sts. Contract calls for 42,000 sq. yds. paving and bids will be received on sheet asphalt, asphaltic concrete, bitulithic brick, sandstone, concrete and creosote blocks.

Washburn, Wis.—County Board has voted to issue bonds in sum of \$50,000 for building county roads.

Niagara Falls, Ont.—City Council at special meeting approved petition for concrete pavement in McCray ave., extending about three blocks from Victoria ave.

CONTRACTS AWARDED

Mobile, Ala.—By County Board, for paving Government st., from city limits to Fulton rd., to Rockwell & Muths, at \$7,500.

Ft. Smith, Ark.—To Wallace Construction Co., for paving with concrete 20 blocks on Parker ave.

Alhambra, Cal.—To O. F. Easley, for improving Fair Oaks ave., at cost of \$30,000.

Corona, Cal.—To J. R. Ott Contracting Co., 515 Merchants' Trust Bldg., Los Angeles, for paving Victoria ave., for \$8,214.

Los Angeles, Cal.—To Bent & Pennebaker, Central Bldg., for laying out townsites known as Torrance, consisting of about 584,000 sq. ft. of asphalt pavement, 644,000 sq. ft. petrolithic pavement, 322,000 sq. ft. cement sidewalks and 55,200 lin. ft. cement curbs, for the Dominguez Land Co., Title Insurance Bldg. Asphalt, 9½ cts. per sq. ft.; macadam, 7.2 cts.; petrolithic, 3.6 cts.; sidewalks, 9 cts.; curb, 25 cts. per lin. ft. Total cost, \$160,000. Lowest bid opened by Board of Public Works, April 15, for paving with asphalt Hill st. was submitted by Fairchild-Gilmore-Wilton Co., of Los Angeles, at 16½ cts. per sq. ft., or total of about \$25,000.

Marysville, Cal.—City Council has accepted bid of C. C. Breddan on street sweeping and street sprinkling, to cover period of one year, as follows: On street sweeping, to include all bitumenized streets now installed, \$120 a month; streets now being improved with bitumen to be paid for in same proportion. On street sprinkling, 14½ cts. per block for first sprinkling and 3 cents per block for second sprinkling; alleys, no charge.

Pasadena, Cal.—To J. E. Haddock, for improvement works on Montana st. His bid, which was lowest received, amounted to \$15,526. Another contract for work

on Montana st. was awarded to same contractor for \$3,316.75. A. C. Hughes secured contract for improvement of Summit ave., his bid of \$711.20 being lowest. A. W. McDowell was successful bidder for work on Bellefontaine st., his bid amounting to \$880.

San Diego, Cal.—For street improvements, as follows: Barber Asphalt Paving Co., paving Second st., \$9,744; to the Fairchild-Gilmore-Wilton Co., for paving "B" st., at \$12,121; to Knight & Hyde, contract for grading and constructing sidewalks on Hamilton st., \$5,397.

San Francisco, Cal.—By Harbor Commissioners, for furnish 125,000 basalt blocks to be used in paving East st., to Wymore Bros., of Melitta, at \$59.50 per M.

Denver, Col.—To J. Fred Roberts, for work in East Denver Improvement No. 7, at \$32,931, including 36,000 cu. yds. grading, 28,670 lin. ft. combination curb, and 30-in. concrete gutter, 53,550 sq. yds. of surfacing and 20,000 ft. lumber for culverts.

Greenwich, Conn.—To Frank W. Murray Contracting Co., Port Chester, N. Y., for grading on S. Water st. and E. Port Chester.

Wilmington, Del.—To H. P. Davis, West Chester, Pa., at \$7,806, for construction of 4.5 miles of road. Contract was also awarded to John O'Neill, Mt. Cuba, Del., for 3.6 miles.

Freeport, Ill.—For paving Iroquois and part of Float st., to Gund-Graham Co., of Freeport, for \$10,001.

Springfield, Ill.—To Capitol City Concrete Construction Co., 214½ S. Sixth st., at \$10,000, for paving in Vine and Glenwood sts. J. E. Bretz, 205 W. Miller st., has the contract, at \$10,285, for paving Union st.

Sycamore, Ill.—W. M. Hay, City Engineer, writes that Geo. A. Peter, of Sycamore, has secured contract for paving E. State st. with brick, about 8,775 sq. yds., for \$14,121, and for Washington pl., 2,004 sq. yds., for \$3,629.

English, Ind.—By Board of Crawford County Commissioners, to Merryman & Ferguson, for grading, draining and paving with stone, etc., of roads in Whiskey Run Township, at \$5,965.

South Bend, Ind.—By Board of Public Works, for paving E. Madison st., to Calvin H. Defrees, for \$18,915.

South Whitley, Ind.—By Town Board, to Hatch & Sons, of Goshen, Ind., for paving of various streets.

Terre Haute, Ind.—By Commissioners of Vigo County, for construction of Hays gravel rd. in Nevins Township, to Hawkins Bros., at \$13,738; and Trueblood rd. in Linton Township, to Wood & Van Gilder, at \$9,960.

La Porte City, Ia.—To J. W. Turner Improvement Co., Des Moines, for 6,100 sq. yds. of brick paving, at \$1.98 per yd.

Mason City, Ia.—For paving with asphalt in Mason City, to Bryant Asphalt Co., at \$1.85 per sq. yd., or total of about \$60,000.

Atchison, Kan.—For paving Division st. with concrete, to Land Construction Co., of St. Joseph, Mo., at \$1.07 per sq. yd.; total, \$15,680. Other bidders—(a) price per sq. yd., (b) totals: Halsey & Rice, St. Joseph, Mo., (a) \$1.12½, (b) \$16,631; McGurin & Stanton, Leavenworth, (a) \$1.13, (b) \$16,953; Olsen-Schmitt, St. Joseph, Mo., (a) \$1.23, (b) \$18,036; Williams & Sampler, Kansas City, Mo., (a) \$1.20, (b) \$18,276; Kelley & Kelley, St. Joseph, Mo., (a) \$1.29, (b) \$18,672.

Baltimore, Md.—To George C. Long Contracting Co., at \$22,781, for paving a section of Third st.

Baltimore, Md.—By Board of Awards, the following contracts, upon recommendation of Paving Commission: Bituminous Concrete Contract No. 14, to Warner-Quinlan Asphalt Co., Syracuse, N. Y., approximate bid \$48,654.70. Sheet Asphalt Contract No. 15, to Warner-Quinlan Asphalt Co., Syracuse, N. Y., approximate bid \$61,595.10. Sheet Asphalt Contract No. 16, to Warner-Quinlan Asphalt Co., Syracuse, N. Y., approximate bid \$78,011.70. Granite Block Contract No. 18, to Cunningham Paving & Construction Co., 1345 Arch st., Philadelphia, Pa., approximate bid \$28,526. Contracts Nos. 1 to 19, inclusive, which have been awarded to date, represent outlay of approximately \$1,000,000. Charles A. Edel, Secretary of Paving Commission.

Tyngsboro, Mass.—To Hub Construction Co., Lowell, at \$6,297, for 3,700 lin. ft. of oil-macadam highway. Contract for 3,600 lin. ft. of oil-macadam road in Bourne, to H. L. Thomas, Middleboro, at \$5,710.

Pontiac, Mich.—To Kneal & Ryan, of Lansing, paving contract at Pontiac amounting to \$6,500.

Bemidji, Minn.—For completion of 2½

miles of road between Funkley and Kelliher, to John Hartman, Kelliher; and remaining four miles of State road No. 11, to John Carlson, of Battle River.

Faribault, Minn.—For paving Second ave. and Fifth st. with creosoted block and sandstone curb, to Fielding & Shepley, of St. Paul, at \$31,486.

Kansas City, Mo.—By Board of Public Works, to Johnson Real Estate & Cement Co., 338 Olive st., at \$10,220.40, for construction of curbs and sidewalks.

St. Louis, Mo.—To Joseph Martin, of Belleville, by Highway Commissioners of Mascoutah and Shiloh Townships, for grading of Mascoutah-Belleville rd. through Silver Creek bottoms, which is to be raised five ft. for more than one mile, at 23 cts. a cu. yd.; also Metropolitan Paving Co. has been awarded contract by Board of Public Works, of St. Joseph, Mo., to pave 20th st., from Mes-sanic to Olive sts., with asphalt macadam, at \$1.35 per sq. yd.

Havre, Mont.—By City Council, for 45,000 sq. ft. of cement sidewalks, to Two Miracle Co., for \$8,215.

Newark, N. J.—By Board of Public Works, as follows: Bryant st., from Summer ave. to Lincoln ave., to P. & P. Jannaone, \$4,104; Lawton st., from Summer ave. to Lincoln ave., to McMahon Construction Co., for \$2,285; Grant ave., from Peshine ave. to Hunterdon st., to McMahon Construction Co., for \$2,086; Elder pl., from Camp st., to McMahon Construction Co., for \$1,497; Merchant pl., from Merchant st., to McMahon Construction Co., for \$1,816.

Rochester, N. Y.—For paving Portsmouth Terrace with creosote wood block, to Brotsch, Hempel & Brotsch, at \$18,504, and to Whitmore, Rauber & Vicinus, for paving Spring st., at \$9,389.

Kearny, N. J.—By Town Council, for paving with bitulithic, Windsor st., to Maher & McNichols, at \$15,161.

Brooklyn, N. Y.—Regulating and repaving with wood block and concrete foundation Clinton ave., from Willoughby ave. to Atlantic ave., to Republic Construction Co., 18 Broadway, New York City, as follows: 15,780 sq. yds. wood block pavement, \$2.54; 2,410 cu. yds. concrete area, \$5; 2,810 lin. ft. new curbs set in concrete, 90 cts.; 3,700 lin. ft. old curbstone reset in concrete, 60 cts.; 15,720 sq. yds. of present asphalt pavement to be removed, 1 ct.; total, \$57,038. Other bidders: Barber Asphalt Paving Co., 30 Church st., New York City, \$62,378; U. S. Wood Preserving Co., 165 Broadway, New York City, \$58,395. For parking and paving with asphalt on concrete foundation Ave. K, from Coney Island ave. to Ocean ave., to Cranford Co., 52 Ninth st., Brooklyn, as follows: 10,200 sq. yds. asphalt pavement (5 years maintenance), \$1.15; 1,420 cu. yds. concrete, \$6.50; 420 lin. ft. bluestone heading stones set in concrete, 95 cts.; 3,395 lin. ft. of cement curb (one year maintenance), 55 cts.; 740 sq. yds. sod, 50 cts.; 610 cu. yds. top soil, \$1.25; total, \$24,359. For regulating and repaving with grade 1 granite on a concrete foundation, Wythe ave., from South Eighth st. to Ross st., and from Rutledge st. to Wallabout st., to M. F. Hickey, 66th st., and Second ave., Brooklyn, as follows: 6,640 sq. yds. grade 1 granite pavement, with grouted joints, \$2.74; 10 sq. yds. of old stone pavement (to be relaid), 50 cts.; 1,110 cu. yds. concrete, \$5; 4,120 lin. ft. new curb set in concrete, \$1; 1,090 lin. ft. old curb reset in concrete, 70 cts.; 540 lin. ft. granite heading stones set in concrete, 70 cts.; total, \$29,010.

Niagara Falls, N. Y.—To Read-Cod-dington Engineering Co., of this city, for paving of Portage rd., from Buffalo ave. to Spruce ave., by Board of Public Works. Pavement will be Penn block asphalt and contract price is \$95,000. Bid per sq. yd. was \$2.65.

Bowling Green, O.—By Board of Commissioners of Wood County, for grading, draining, macadamizing and otherwise improving roads, as follows: Charles Schumacher rd., C. W. Ryan, Maumee, O., \$16,288.26; Andrew Hanley rd., Stony Ridge Stone Co., 309 Chamber of Commerce Bldg., Toledo, O., \$21,062.12; Chas. H. Coy rd., Johnson, Van Wagner & Johnson, Tontogany, O., \$5,621.11; James Daum rd., J. E. Wixsom, North Baltimore, O., \$6,511.78; Jacob Schramm rd., Wood County Stone & Construction Co., Bowling Green, \$39,682.25.

Columbus, O.—To W. O. Jewett, Worthington, at \$3,310, for grading and macadamizing; also to J. N. Snouffer, 46 W. Oakland ave., Columbus, at \$29,029, for grading and macadamizing 5.86 miles of road.

Delaware, O.—By Board of Commissioners of Delaware County, for construction of roads, as follows: Culver

Creek rd., V. T. Barton, Sunbury, O., \$8,875; Sections 1 and 2 of a road, White Sulphur Construction Co., White Sulphur, O., \$6,000 and \$3,155, respectively.

Paulding, O.—By Board of Commissioners of Paulding County, for grading, draining, culverting, macadamizing, etc., as follows: Section 1, McMillen pike and Taylor pike, Bobenmyer, Sherrard & Randolph, Oakwood, O., \$14,039.80 and \$13,703.43, respectively; Section 2, McMillen pike, J. S. Blosser, Cloverdale, O., \$19,837.80; Allison pike, W. L. Wolf, Ohio Bldg., Toledo, O., \$18,555.94.

Steubenville, O.—For paving, as follows: For grading and paving with a waterbound macadam the New Somerset rd. in Knox Township, 2.67 miles, to McLaughlin, Rayl & McLaughlin, East Liverpool, for \$28,161. At Cambridge, for grading and paving with brick for heavy traffic highways the Newcomerstown rd. in Cambridge Township, 1 mile, to Adams Bros. Contracting Co., Zanesville, for \$14,447; and same company, for grading and paving with brick for heavy traffic highways the Steubenville rd. in Cambridge Township, 1 mile, for \$15,132.

Youngstown, O.—By City, to Turner & Oleson, Youngstown, at \$10,641, for paving Elm st.

Salem, Ore.—By City, to Jahn Construction Co., at \$10,080, for street improvement.

Brownsville, Pa.—By Borough Council, to P. F. Rhoades & Son, McKeesport, Pa., at \$22,000, for street improvements.

Oil City, Pa.—For paving, as follows: Coeburn ave., Northwestern Construction Co., Franklin, Pa., \$37,000; North st., J. M. Leshner, Oil City, \$8,400; Seeley ave., Lancelot Paving & Construction Co., New Kensington, Pa., \$7,000.

Philadelphia, Pa.—By Director Cooke, for asphalt patch repairs, to Eastern Paving Co., for work on non-traction streets. This company was low bidder, at 98 cts. for repairs where foundations did not require renewal, and \$1.58 for repairs with new foundations. Total value of contract is about \$15,000.

York, Pa.—By Park Commissioners, for 4,000 ft. of concrete curbing and guttering, and for 850 ft. of curbing without guttering, for Penn Park, to A. B. Kraft, while Schum & Ruhl are awarded contract to furnish crushed stone for use on walks at same park.

Providence, R. I.—By State Board Public Roads, Providence, for constructing sections of State highway in following towns: Gloucester, 4.9 miles, to B. Perini, for \$41,800; Coventry, 3.2 miles, Bristow Bros. & Knowles Corp., \$23,726; South Kingstown, 4.4 miles, Bristow Bros. & Knowles Corp., \$21,438; Exeter and Richmond, 3.9 miles, E. J. Rourke, \$30,330; Johnston and Cranston, 2 miles, Chas. E. Horne, for \$15,981 for macadam; Burrillville, 1 mile, to Amos D. Bridges' Sons Co., for \$5,289, and in Warwick, to Bristow Bros. & Knowles Corp., \$60,488.

Memphis, Tenn.—By City, to Memphis Asphalt & Paving Co., Memphis, at \$7,121, for paving Fourth st.

Aberdeen, Wash.—For paving with asphalt W. Herron st., about 9,000 sq. yds., to Barber Asphalt Paving Co., of Seattle and New York, for \$23,280.

Cashmere, Wash.—By City, for sidewalk construction, to C. M. Payne, of Spokane, as follows: Sidewalks, 94 cts. per sq. yds.; street crossings, \$2.14 per sq. yd.; alley crossings, \$1.23; concrete curb, 37 cts. per lin. ft.; street surfacing, 30 cts. per cu. yd.

Everett, Wash.—For improvement of Rockefeller ave. from Hewitt ave. to 19th st., to Atlas Construction Co., by Board of Public Works. Bids as follows: Atlas Construction Co., \$61,060; P. J. McHugh, \$63,560; F. Kerr Folliott, \$64,400; Sloane Brothers, \$66,997.50; Walsh & Christiansen, \$72,963; Xura Case, \$76,310.35.

Olympia, Wash.—For paving with asphalt six blocks on East 40th st., to W. A. Weller, of Olympia, at \$32,470. Washington Paving Co., of Tacoma, were lowest bidders at \$30,226 for paving of Fourth st.

Tacoma, Wash.—By City, to John Huntington & Co., 1712 Commerce st., for extension of Jefferson ave., from 27th st. to Center st., at \$49,500.

Tacoma, Wash.—By County Commissioners, for 8 miles of hard surface highway, 76,000 sq. yds., to Washington Paving Co., of Tacoma, for granocrete pavement 4½-in. base and 1½-in. wearing surface, at \$1.40 per sq. yd. Total cost, \$112,128.

Tacoma, Wash.—For paving of roadway in Point Defiance Park, 10,000 ft., to Jos. Warter, for \$19,525.

Tacoma, Wash.—For paving of roadway in Point Defiance Park, from Pearl st. entrance to rustic bridge, distance of 10,000 ft., by Metropolitan Park Board, to Joseph Warter, Sr., of this city, on bid

of \$19,525. Other bids submitted included following: Anderson & Liljebeck, concrete, \$14,990; Keasal Construction Co., concrete, \$15,153.40; bitucete, \$15,205.08, and asphalt, \$19,080.70; Washington Paving Co., Elosa, \$15,369, and Granoconcrete, \$16,103; A. H. Robinson, Dollarway, \$16,800; concrete, \$16,991, and asphalt, \$21,233.35; William M. Ollar, Dollarway, \$15,700; Warren Construction Co., Warrenite with stone base, \$19,423, with concrete base, \$20,663; Independent Paving Co., asphalt, \$22,520.05; Dietrich Co., Gladwell, stone base, \$21,122.25, and concrete base, \$23,499.30; Joseph Warter, Sr., Warrenite, with four-in. concrete base, \$20,663, with five-in. concrete base, \$21,500. Pavement will be 24-ft. wide and under contract will be guaranteed for five years. It is expected to be completed in 40 days.

DeFere, Wis.—By Common Council, to White Construction Co., Milwaukee, for paving Fourth and Fifth sts.

Waukesha, Wis.—For paving E. Main, Caroline, Pleasant, Martin, Barstow, Randall sts. and St. Paul ave., to Geo. H. Stanchfield, of Fond du Lac, for \$43,925.

Windsor, Ont.—To George Caldwell & Co., at \$27,184, for 20,000 yds. of paving on May and Hall aves.

BIDS RECEIVED

Syracuse, N. Y.—Bids for resurfacing pavement in South Clinton st., from West Jefferson st. to West Onondaga st., as follows: Asphalt, Warner-Quinlan Asphalt Co., \$7,375.60; Guy B. Dickinson, \$7,712.40; F. J. Baker, \$7,850.30. Vitrified brick or block and asphalt, Warner-Quinlan Asphalt Co., Cowan block and asphalt, \$7,575.80; Metropolitan block and asphalt, \$7,580; J. F. Baker, Olean block and asphalt, \$8,008.50. Sandstone block, Warner-Quinlan Asphalt Co., \$18,893.60; F. J. Baker, \$18,947.60. Vitrified brick or block, Warner-Quinlan Asphalt Co., Cowan block, \$12,797.90; Metropolitan block, \$12,954.20; F. J. Baker, Olean block, \$13,737.60. Sandstone and asphalt, Warner-Quinlan Co., \$7,739.60; F. J. Baker, \$8,148.50.

Green Bay, Wis.—For paving of west side streets, as follows: E. H. Steinfeld Co., Main ave., combined curb and gutter, 50 cts. lineal ft.; concrete wearing surface, \$1.40 sq. yd.; asphaltic macadam, \$1.39. Fourth st., combined curb and gutter, 51 cts.; concrete wearing surface, \$1.43; asphaltic macadam, \$1.44. Fifth and Grant, combined curb and gutter, 51 cts.; concrete wearing surface, \$1.44; asphaltic macadam, \$1.45. Fred Eul Co., Main ave., combined curb and gutter, 52 cts.; concrete wearing surface, \$1.46; asphalt, \$1.95; other streets were the same price for concrete wearing surface and for asphalt, the only difference being the price for the combined curb and gutter. McGrath Construction Co., Main ave., price for the combined curb and gutter the same on all streets, 52 cts.; asphaltic concrete, \$1.44; concrete wearing surface, \$1.34; asphaltic macadam, \$1.29. Fourth st., asphaltic concrete, \$1.52; concrete wearing surface, \$1.42; asphaltic macadam, \$1.37. Fifth and Grant, same as Fourth with exception of asphaltic macadam which is \$1.32. White Construction Co., combined curb and gutter, 45 cts.; asphalt 1½-in. wearing surface, \$1.72; 2-in. wearing surface, \$1.82; asphaltic concrete, \$1.49. The price on Fourth and Fifth and Grant sts. are the same. Nelson Weber Co., Main ave., curb and gutter, 52 cts.; concrete wearing surface, \$1.43; asphaltic macadam, \$1.62. Fourth st., combined curb and gutter, 52 cts.; concrete wearing surface, \$1.48; asphaltic macadam, \$1.65. Fifth and Grant, combined curb and gutter, 52 cts.; concrete wearing surface, \$1.48; asphaltic macadam, \$1.65.

SEWERAGE

San Francisco, Cal.—Supervisors have decided to sell \$1,000,000 worth of sewer, school and fire protection bonds on July 1.

San Francisco, Cal.—Board has opened bids for construction of section of main outlet sewer for western part of city, this section to extend across Golden Gate Park and along 48th ave. to Cabrillo st. There were eight bidders, and Consolidated Construction Co. was lowest. D. W. McClenahan's bid of \$1,245 was lowest for septic tank for Golden Gate Park. The contracts are not yet awarded.

Wilmington, Del.—City Council has passed ordinance to borrow \$100,000, of which amount \$50,000 is to be special fund for Street and Sewer Commissioners to use in extending sewer system, and balance to cover cost of widening 11th st.

Wilmington, Del.—Wilmington's Street and Sewer Department has asked Council for \$194,000 for next fiscal year.

Fort Wayne, Ind.—Engineer Frank M. Randall has been ordered by Board of Works to prepare plans for sewer in alley between Tilden and Columbia aves.

Indianapolis, Ind.—Board of County Commissioners has rejected all bids received on proposed sewage disposal plant at hospital for incurable insane at Julietta. Special meeting of County Council has been called for May 8, when question of cost of plant will be taken up and another appropriation will be made. It is now thought best to advertise for bids on whole job, contractor to employ all help. Lowest bid submitted was \$1,850, while County Council had appropriated \$1,600.

Iowa City, Ia.—Council has ordered 3½ miles of sewers in east end; cost, \$16,675.

Newton, Ia.—Erection of sewage disposal plant is being considered.

Boston, Mass.—Resolution authorizing bond issue of \$32,500 for sewerage, surface drainage, street paving and brick sidewalks, has been adopted by Council.

Boston, Mass.—Council has passed on their final reading order appropriating \$175,000 for sewer improvements in south end; \$150,000 for other sewer works.

Baltimore, Md.—Lowest bid received for Sanitary Contract No. 87 was that of B. F. Sweeten & Son, Baltimore, Md., at \$167,726. Other bids as follows: Whit-Turner Construction Co., Baltimore, \$184,309.70; Jas. Perry & Sons, Pittsburg, \$200,131.75; Ryan & Reilly, Baltimore, \$212,361.25. Lowest bid received for Sanitary Contract No. 88, District No. 40-B was that of Jas. Perry & Sons, Inc., Pittsburg, at \$84,904.50. Other bids as follows: B. F. Sweeten & Son, Baltimore, at \$85,803, and Ryan & Reilly, at \$102,700.75. Calvin W. Hendrix, Chief Engineer.

Thief River Falls, Minn.—Construction of three new sewer systems, to cost about \$300,000, is being considered by Council.

Butte, Mont.—Special election will be held for voting on proposition of \$200,000 bond issue for reconstruction of storm sewer system.

Maplewood, Mo.—City will shortly let contract for about 10 miles of sewers, ranging in size from 12-in. to 4 ft., with necessary manholes, inlets, catch basins and septic tanks. R. E. McGrath Surveying Co., 226 Title Guaranty Bldg., St. Louis, Mo., are the engineers. F. E. Guiboe, Mayor; M. F. O'Brien, City Clerk.

Detroit, Mich.—Common Council has approved of bond issue of \$188,000 for sewers.

Ft. Benton, Mont.—State Board of Health is considering plans for sanitary and storm sewers, to cost \$35,000. Engineers are Burns & McDonnell, of Kansas City, Mo.

Livingston, Mont.—Sum of \$20,000 will be expended in sewer construction.

Newark, N. J.—Passaic Valley Sewerage Commission has received formal request from town of Bloomfield for permission to join in trunk sewer project.

Kingston, N. Y.—Ordinance has been passed for construction of sewer in Hasbrouck pl. John T. Cummings, City Clerk.

Oswego, N. Y.—City Engineer Charles H. Snyder has stated that plans and specifications for proposed new sewerage systems on east and west sides of river had been completed. He said that they would probably be forwarded shortly to State Department of Health for approval.

Altoona, Pa.—Mayor S. H. Walker has signed two sewer ordinances which will bring sewage facilities to residents in two sections of city. One measure provides for 8-in. clay pipe in Bell ave., between Kettle and Lloyd sts. Other sewer which is of same size is located at 20th st., between 20th and 21st aves. Board of Public Works will advertise for bids on work and operations should start at early date.

Erie, Pa.—Ordinances have been passed for constructing sewers in various streets.

Franklin, Pa.—Construction of sewage disposal plant, to cost \$4,450, has been authorized.

McKeesport, Pa.—Mayor H. S. Arthur has signed bill providing for construction of 8-in. terra cotta sewer on Fayette st. in Eighth Ward.

Gettysburg, S. Dak.—Bonds in sum of \$10,000 will be sold for installation of sewer system.

Nashville, Tenn.—Bill has been passed appropriating \$2,000 for construction of sewer in Troost st., and \$4,000 for construction of sewer in alley No. 402.

Bryan, Tex.—Effort is being made to have sewer system extended to Allen Academy in eastern part of city. Citizens along proposed route are subscribing money to build line, city to give them

credit in sewer rental for amount each one subscribes.

Dublin, Va.—Bond issue is being considered for sewers and water works.

Hoquiam, Wash.—Construction of system of storm and sanitary pipe sewers is contemplated.

Spokane, Wash.—Plans have been completed by City Engineer for downtown intercepting sewer, to cost \$215,000.

Spokane, Wash.—City Council has rejected all bids for sewer of Spokane st., Fourth to Hartson ave., and will re-advertise.

Superior, Wis.—No objections being registered at meeting of Board of Public Works to building of proposed main sewer in Billings Park, Board has ordered secretary to advertise for bids for work.

Superior, Wis.—Board of Public Works is holding public hearing on main sewer which it is proposed to build in Ninth Ward. Proposed sewer will be located in alley south of Belknap st., between Susquehanna and Elmira aves.

CONTRACTS AWARDED

Denver, Col.—For work in Part "A" of sub-district 15 For West and South Side sanitary sewer district, to Denver & Pueblo Construction Co., at \$16,111. Work includes 26,199 ft. 8-in. vitrified pipe sewer, 230 lin. ft. 8-in. vitrified pipe sewer in concrete, 82 manholes and 14 single flushers.

Bridgeport, Conn.—For construction of east end trunk sewer, to Pierce Manufacturing Co., at \$20,000. Same company was also awarded contract for Boston ave., Huntington ave. and French st. sewers.

Fort Pierce, Fla.—To Smith & Maule, Titusville, at \$181,000, for construction of hard-surface roads, bridges and docks. The contract includes: 100,000 cu. yds. of excavation and embankment, 90,000 cu. yds. of hard-surface material, 700 lin. ft. of trestle bridges, two docks, also 75,000 cu. yds. of embankment.

St. Petersburg, Fla.—For laying 200,000 sq. yds. concrete block sidewalk and 25,000 lin. ft. street curbing, in Hall's Central ave. sub-division, to H. A. Farmer, St. Petersburg, Fla., at total cost of about \$30,000.

Boise, Idaho—For construction of concrete road 5,100 ft. long, to Inland Empire Hassam Paving Co., Spokane, Wash., at \$14,187.

Boise, Idaho—By Board of Public Works, for constructing sewer of cement pipe in Main sewer district No. 2, to Idaho Hardware & Plumbing Co., at \$25,062.71, and for construction of sewers in lateral sewer district No. 111 of vitrified clay pipe, with concrete manholes and flush tanks, to Reliance Construction Co., at \$35,349.35. J. B. Marcellus is Assistant City Engineer. E. G. Eagleson, City Engineer.

Blue Island, Ill.—To Seyfarth Bros., Blue Island, and T. H. Iglehardt, Chicago, for constructing 10,000 ft. vitrified pipe sewer.

Decatur, Ill.—To Allen-Alexander Co., Decatur, and S. A. Tuttle, Decatur, for paving E. William st., at \$44,279 and \$44,723, respectively.

Elgin, Ill.—To Illinois Hydraulic Stone Co., at \$1,275, for construction of sewer in W. Chicago st.

Lawrenceville, Ill.—By Board of Local Improvements, to Interstate Construction Co., Hammond, Ind., at \$44,525.15, for construction of sewer system in Sewer District No. 3.

Moline, Ill.—By Board of Local Improvements, to Plambeck Heating & Plumbing Co., at \$1,292.80, for construction of 880 ft. 8-in. sewer and 880 ft. 6-in. water main.

Burlington, Ia.—City will spend \$50,000 for concrete and pipe sewers.

Des Moines, Ia.—To J. W. Turner Improvement Co., for Greenwood Park sewer, at \$1.58 per ft., distance of 15,000 ft. T. J. Casselbury was awarded 44th and Center sts. sewers for 86 cts. per ft., 1,300 ft.

Eagle Grove, Ia.—By City, for paving to Des Moines Asphalt Co., at \$1.37 per sq. yd.

Knoxville, Ia.—For 9,328 ft. 8-in. and 1,570 ft. 10-in. sewer, with 29 manholes and 4 flush tanks, as follows: Hoar & Parkinson, Iowa City, \$13,827; Inman & Burras, Kansas City, Mo., \$11,801 (awarded contract); J. W. Turner Improvement Co., Des Moines, \$14,060; A. Korneman & Co., Muscatine, \$14,119; Blackhawk Construction Co., Waterloo, \$12,326; W. E. Rosecrans, Ames, \$12,008.

Mason City, Ia.—For asphalt paving, to Bryant Asphalt Co., at \$1.85 per yd.; total cost about \$60,000.

Atchison, Kan.—For building pipe sewer in Sewer District No. 6, to Derr

Construction Co., of Oklahoma City, Okla., for \$20,762. S. K. McCrary is City Engineer.

Henderson, Ky.—By City, to Ed. Manion, to build 9,000 ft. of sewer to divert flow from Canoe Creek into Ohio River; cost, \$3,000.

Tompkinsville, Ky.—By Monroe County Commissioners, to P. Keating, Shelbyville, Ky., at \$2,200 per mile, to build road from Tompkinsville to Olla, on Cumberland River, eight miles.

Baltimore, Md.—By Paving Commission, contract No. 19, to Consolidated Engineering Co., Emerson Tower Bldg., Baltimore, at \$2,412, for vitrified block pavement. Charles A. Edel is Secretary of Paving Commission.

Fitchburg, Mass.—By Sewage Disposal Commission, for constructing main intercepting sewer Section 1, to Little & Seretto, of Leominster, at following bid: 90,225 lin. ft. excavation and refilling trench, 48-in. concrete, \$2.85; 50 cu. yds. rock excavation, \$6; 550 cu. yds. concrete masonry in trench (1:2½:4½), \$10; siphon chamber complete, \$500; 180 lin. ft. 24-in. overflow, \$5.40; 54 cu. yds. brick masonry in manholes, \$17; 5,081.25 lin. ft. excavation and refilling trench, 30-in. cast iron pipe, \$2.50; 30-in. cast iron pipe blowoff (complete), \$325, and 24,000 ft. lumber, \$20; total, \$24,270. Other bidders: McCarthy & Walsh, E. Boston, \$27,622; Michele Russo, Boston, \$28,495; Kelly & Ferguson, Dorchester, \$28,788; Joseph Long & Co., Leominster, \$29,272; A. G. Tomasello, Dorchester, \$31,029; Bruno & Petitti, Boston, \$39,039; John J. Falvey, Somerville, \$52,690.

Westfield, Mass.—For sewers and conduits, to Cordner & Montague, of Springfield, for \$8,964. John L. Hyde is Town Engineer.

Lansing, Mich.—By Board of Commissioners of Ingham County, to Price & Hurley, Marion, O., at \$27,000, for toll gate drainage.

Crookston, Minn.—To P. McDonnell, Duluth, Minn., at \$2.50 per ft., for constructing 816 lin. ft. of 20-in. vitrified clay pipe sewer.

Detroit, Minn.—For work on State highway No. 2, to Jas. Hickey, of Detroit, at 17½ cts.

Little Falls, Minn.—To W. H. Ryan, for Third st. northeast sewer extension, for \$1,053, or \$1.35 per ft.

Rochester, Minn.—To Fraser & Danforth, St. Paul, Minn., at \$2,290, for construction of Fifth, Sixth, Seventh and Eighth sts. sewers.

Carthage, Mo.—By City, to R. J. and W. M. Boyd Co., Kansas City, Kan., at \$4,550, to pave Main st., from Second to Fifth sts.; at \$7,262.50, to pave Third st., from Maple to Howard sts., and at \$5,582.50, to pave Grant st., from Second to Fifth sts.

Kansas City, Mo.—By Board of Public Works, to Williams & Samples, at \$4,986.55, for construction of sewers.

Mound City, Mo.—For sewer work, to Skilbred Construction Co., of St. Joseph.

St. Louis, Mo.—For constructing sewers in Glaise Creek Sewer District No. 5, to include about 1,723 ft. 40 x 60-in. to 24 x 36-in. brick and Portland cement mortar sewers and 15,255 ft. 25 to 12-in. vitrified clay pipe sewers, to Wm. F. Riley, Navarre Bldg., \$29,742. Other bidders as follows: Jacob Althaus, \$32,064; Harry F. Heman, \$31,570; Hirsch & Micatto, \$31,441; Patrick McIntyre, \$30,645; J. P. McMahon, \$30,181; Robt. Wycoff, \$29,830.

Corning, N. Y.—To F. W. Green, for construction of 8,000 ft. of 12-, 10-, 8- and 6-in. vitrified sewers.

New Hartford, N. Y.—By Sewer Commissioners of Town District No. 1, for constructing sewer system and sewage disposal plant from plans of A. M. Scripture, 6 Higby ave., New Hartford, to Tibbitts-Maher Co., of Oneida, at \$38,664. Bid of this company for excavation and backfill was 18 cts. to \$1 per ft., vitrified pipe, 20- to 6-in., 72 cts. to 13 cts.; cast iron pipe, \$42 per ton; concrete, \$8.40 per cu. yd.; manholes, each, \$35; flushtanks with Miller siphons, \$65.

Watertown, N. Y.—To Semper Bros., for building 11 mile stretch of State highway, from Owego to Binghamton, at \$72,094.

Charlotte, N. C.—By City, for constructing sewers, to Dabbs & Myers, of Meridian, Miss., for \$37,884. Jos. Firth is City Engineer.

Fargo, N. Dak.—To G. W. Haggart Construction Co., sewer contract, at \$1.20 per ft., and water main on Eighth st., at \$1.35. Chas. H. Porritt was only other bidder at \$1.54 on first contract and \$1.40 on second.

Lakewood, O.—For constructing three miles of sewers, from plans of Chas. W. Root, Society of Savings Bldg., and con-

tract for portion of the work to Jos. Winterbottom, of Cleveland. His bid in detail is as follows: 170 ft. 12-in. pipe, \$2; 300 ft. No. 4 brick, \$4.80; 300 ft. No. 5 brick, \$5.20; 510 ft. No. 6 brick, \$6.20; 340 ft. 24-in. pipe, \$3; 300 ft. No. 3 brick, \$5; 450 ft. No. 5 brick, \$6; 2,100 ft. No. 6 brick, \$7; 1,400 ft. No. 9 brick, \$8.50; one overflow, \$150; 16 manholes, each, \$40; 25 ft. 24-in. pipe spur, \$3; 75 ft. 18-in. pipe spur, \$2.50, and 200 ft. 10-in. C. B. outlet, \$1. B. M. Cook is City Clerk.

Dreshertown, Pa.—To H. W. Goebel & Co., 1524 Chestnut st., Philadelphia, at \$10,000, for field drainage.

Chattanooga, Tenn.—By Hamilton County Road Commission, for extension of paving on Georgia ave., St. Elmo, to entrance to cemetery, to West Construction Co., and calls for expenditure of about \$3,000. This short roadway is about 500 ft. in length, and will be of asphalt construction.

Knoxville, Tenn.—For building Loudon County pikes, to J. B. McTye & Co., of Knoxville. This calls for grading of 50 miles of pike and macadamizing of 10 miles. Estimated cost of this work is \$100,000. R. L. Peters & Co. have secured pike road contract in Monroe County, amounting to \$30,000. Number of East Tennessee counties will do pike work this year. Knox County will spend at least \$63,000 on repairing pikes in this county, besides work done on repairs by branch workhouse crew. Repair work contract for Knox County will be awarded in near future.

Loudon, Tenn.—By Loudon County, to J. P. McTye & Son, Knoxville, Tenn., to build roads costing \$100,000; proposes to grade 50 miles and macadamize 10 miles, rock portion being on Memphis-to-Bristol highway.

Madisonville, Tenn.—By Monroe County Commissioners, to R. L. Peters, Knoxville, Tenn., at \$276,180, to grade 160 miles of roads and build required bridges. Work will be provided for out of \$300,000 bond issue.

Dallas, Tex.—By City, for storm sewers on Parry ave., from Third to Second aves., to Standard Engineering & Construction Co., at \$2,292.83.

Fort Worth, Tex.—To Roach & Mannigan Paving Co., for paving Houston st. with creosoted blocks.

Temple, Tex.—To Ockander Bros., of Waco, for one block of vitrified brick paving on Adams ave., between Main and First sts., at price of \$2.31 per sq. yd.

Richmond, Va.—By City, to W. F. Bowe, for cement sidewalks and curbing. Charles E. Bollings is City Engineer.

Richmond, Va.—By City, to A. J. Twigg & Sons, at \$18,524, to construct brick sewer on Central ave., and to T. G. Brittingham, to construct small terra cotta sewers; latter calls for all sewers ranging from 12 to 24 in. Charles E. Bolling is City Engineer.

Cashmere, Wash.—By City, for sewer construction, to Jahn Contracting Co., of Seattle, for \$12,093.

Fond du Lac, Wis.—To Jas. McCabe, for storm sewer on E. Third st., for \$173 and on Scott st., for \$3,102.

Bluefield, W. Va.—By Board of Affairs, to John Steader, Huntington, W. Va., at \$15,000, for construction of sanitary and storm sewers.

Wheeling, W. Va.—By City, to Coss & Meyer, of Wheeling, at \$15,340.32, to pave McCulloch st., from Baker to 12th sts.

Saskatoon, Sask.—To Western Foundry & Machine Co., of Saskatoon, for 41,400 lin. ft. concrete pipe sewer at following bid: 24-in., \$1.85 per lin. ft.; 20-in., \$1.26; 18-in., 94 cts.; 15-in., 72 cts.; 12-in., 42 cts.; 10-in., 34 cts.; 8-in., 26 cts.; 6-in., 16 cts., and 5-in., 14 cts.

WATER SUPPLY

Johnston, Col.—City is considering installation of gravity water system, to cost about \$18,000.

Monticello, Ga.—Sum of \$8,000 will be expended for extensions to water mains.

Charles City, Ia.—Special election will be held for voting on \$25,000 bond issue for pumping plant and municipal lighting plant.

Indianapolis, Ind.—Board of Public Works has ordered Indianapolis Water Co. to lay water mains in various streets.

Warsaw, Ia.—Gravity filtering system to cost about \$4,000 will be installed; capacity of 45,000 gal.

Detroit, Mich.—Water Board has asked permission to issue \$240,000 bonds to complete its extensions and improvements.

Grand Rapids, Mich.—Bids will be received by City Clerk up to 4 p.m., May 6, for purchase of \$145,000 rapid sand filtration bonds. James Schriver, City Clerk.

Benson, Minn.—Bids are being received by City Clerk for 1,560 ft. of 4-in. water main.

Ely, Minn.—Installation of filtration plant in municipal water works is contemplated.

Red Lake Falls, Minn.—Vote will be taken May 14 on question of bonding city for \$25,000 for construction of water works.

Two Harbors, Minn.—Installation of filter plant has been recommended by Fred Voss, Chief Engineer of State Board of Health of St. Paul.

Keewatin, Minn.—Bids are being received for construction of 80,000-gal. concrete water reservoir.

Crystal Springs, Miss.—Improvements have been planned for water works.

Cape Girardeau, Mo.—Plans are being prepared for installation of water works and electric light plant to cost \$250,000.

Culbertson, Mont.—Sum of \$1,400 will be expended to improve water system.

Freehold, N. J.—Plans are being made for construction of new concrete dam and reinforced bulkhead at Lake Topanemus, owned by the town of Freehold.

Glen Ridge, N. J.—Bids for \$44,000 water bonds by Glen Ridge for purchase of plant of Orange Water Co. within borough have been awarded at special meeting of Borough Council, to Bond & Goodwin, of New York, on their bid of \$45,500.84.

Binghamton, N. Y.—Addition will be constructed to filter plant, to cost about \$75,000.

Lyons, N. Y.—Engineers Witmer & Brown, Chapin Block, Buffalo, have been engaged to design and superintend construction of municipal water works system.

Bassett, Neb.—Estimate and plans for water works system are being made by Alamo Engine & Supply Co., Omaha.

Burning, Neb.—Election will be held May 14 for voting on \$12,400 bond issue for water works system for town.

Lisbon, O.—Bonds in sum of \$10,000 are said to be sold to be used for piping water from wells to pumping station.

Perkins, Okla.—Plans prepared by Benham Engineering Co., American National Bank Bldg., Oklahoma City, has been accepted for water works.

Furcell, Okla.—Proposed water works and electric light plant will cost about \$75,000. Plans are being considered.

Waterford, N. Y.—City will construct water works at cost of about \$200,000.

Williston, N. Dak.—New water works plant will be installed.

Cincinnati, O.—City Auditor Washburn is offering for sale \$199,500 water works extension bonds.

Dover, O.—Council has passed ordinance authorizing water works improvements.

Pilot Rock, Ore.—Installation of municipal water works is being considered.

Media, Pa.—Media Council has decided to purchase stock of Nether Providence Water Co. for about \$11,000, and furnish water, in addition, to residents of Moylan and South Media.

Pierpont, S. Dak.—Issuance of bonds for installation of a pressure system for fire protection is being considered, as pressure of artesian well which supplies town with water is not sufficient.

Nashville, Tenn.—City is considering construction of five miles of 6-in. water mains.

Sulphur Springs, Tex.—Bonds in sum of \$30,000 have been voted for improvements to water works.

Dublin, Va.—Bond issue is being considered for water works and sewers.

Bremerton, Wash.—Bond issue of \$150,000 has been voted for purchase of plant of Bremerton Water & Power Co.

Owen, Wis.—Bids are being received by City Clerk for laying 1,230 8-in. and 6,668 6-in. cast iron pipe, etc. G. D. Richards, Village Clerk.

Two Rivers, Wis.—New equipment and machinery will be installed to water and light plant. New turbine and generator, to cost \$15,000, also electric pump.

Wausau, Wis.—Purchase of Snow pump to cost \$14,180 has been recommended by Water Commission.

CONTRACTS AWARDED

Tuskegee, Ala.—For water supply system for Tuskegee Institute, to Huffman-Conklin Co., Columbus, O. Walter G. Franz is Consulting Engineer, Cincinnati, O.

Ft. Pierce, Fla.—By Common Council, for constructing water works, sewers and electric lights, as follows: To American Cast Iron Pipe Co., Birmingham, Ala., pipe and specials, \$14,300; to R. D. Wood & Co., Philadelphia, Pa., hydrants, valves and valve boxes, \$1,465; to Walsh & Weidner, Chattanooga, Tenn., for 2

boilers, \$3,245; to D. D. Cole Mfg. Co., Newnan, Ga., \$3,830; to J. G. Christopher & Co., Jacksonville, for 2 pumps, \$1,402; to Maule & Smith, for laying pipe, \$5,317, and for power house, \$3,950; to E. N. Jelks, Macon, Ga., for sewer pipe, \$6,494; to A. J. Brewer, Ft. Pierce, for reservoir, \$1,540, and foundation, \$1,720; to Ft. Wayne Electric Co., Atlanta, Ga., generators, \$1,270; to Ball Engine Co., Erie, Pa., for engine, \$2,959; to Western Electric Co., of Atlanta, for transformers, \$1,098 and to L. T. Forlow, Daytona, Fla., for street lighting system, \$5,977. D. D. & C. M. Rodgers, Engineers, Ft. Pierce.

Normal, Ill.—To American Well Works, Chicago, for pumps and wells, and C. C. Bowman, Bloomington, Ill., for reservoir and building, cost about \$14,856.

Cedar Falls, Ia.—By Council, for sinking two wells, to North American Well Drilling Co., at \$1,042.

Cherokee, Ia.—To Blackhawk Construction Co., for extension to water system, for \$3,402. Other bids were received as follows: Cook Construction Co., Des Moines, \$3,525; Swanson & Betsworth, Cherokee, \$3,545.

New Bedford, Mass.—For water pipe, as follows: To United States Cast Iron Pipe & Foundry Co., Philadelphia, for cast iron pipe, at \$21.65 per ton, and special castings at \$47 per ton. Total amount of bid, \$84,644. Other bidders were: Donaldson Iron Co., Emans, Pa., \$89,161; R. D. Wood & Co., Philadelphia, \$94,144; Warren Foundry & Machine Co., New York, \$89,027; Standard Cast Iron Pipe & Foundry Co., Bristol, Pa., \$87,368.

Pittsfield, Mass.—By Board of Public Works, to Edw. B. Roberts, 526 Old South Bldg., Boston, at \$26,000, for laying water pipe.

St. Paul, Minn.—To Allis-Chalmers Co., for pumping engine, for \$7,870, although highest bid, their pump being considered best by City Engineer. Ludlow-Dunn Gordon Co. bid \$6,735 and Platt Iron Co., \$7,655.

Atlantic City, N. J.—To Dravo-Doyle Co., of Philadelphia, for furnishing a 10,000,000-gal horizontal or vertical condensing steam turbine engine and centrifugal pump at \$9,986.

Corning, N. Y.—By Superintendent Public Works, for 3,000,000-gal. pump, to Goulds Mfg. Co., of Seneca Falls, for \$5,100.

Yonkers, N. Y.—Seven of eight contracts for new filter beds have been awarded by Board of Contract and Supply. There were no bids for eighth contract and it may be necessary to re-advertise. H. E. Fox, of New York, who has been awarded principal contract, will construct filters while other contractors will furnish appurtenances and perform

minor work. Mr. Fox's bid amounts to \$115,315. Other contracts for filter beds were awarded to United States Cast Iron & Foundry Co., \$6,019; Eddy Valve Co., \$1,091.55; David E. Allen, \$1,491.50; Norwood Engineering Co., \$66; Standard Cast Iron Pipe Co., \$792, and the Baldwin Iron Foundry Co., \$1,015.

Avard, Okla.—By City, to C. E. Humrichouse, Carmen, Okla., to construct water works, including five miles of mains.

Muskogee, Okla.—To Pittsburgh Filtering Co., of Pittsburgh, Pa., for installing equipment for new purification plant, for about \$8,855.

Gladstone, Ore.—By City, for ditching and back-filling wood pipe and fittings installed for reservoir, to Jahn Contracting Co., of Seattle, Wash., for \$15,500.

Pittsburgh, Pa.—To Booth & Flinn, 1942 Forbes st., for laying and lowering water mains in hump district, for \$30,743.

Belleville, Wis.—For water works system, to J. N. Doherty, Janesville, Wis., at \$11,818. J. B. Clow & Sons, Chicago, will furnish cast iron pipe, valves and hydrants.

Independence, Wis.—By Village, for wells, pump house, pump and discharge pipe line connecting with water mains, to Fairbank-Morse & Co., of St. Paul, Minn., for \$4,000.

Waertown, Wis.—By Water Commission, for furnishing 700-gal. low lift centrifugal pump, 10 horsepower induction motor and compensator, to Gould & Co., of Chicago, Ill.

Wausau, Wis.—For furnishing a 6,000,000-gal. pump for water works, to Platt Iron Works Co., Dayton, O., \$14,737. Other bids as follows: Canton Hughes Pump Co., Worsted, O., \$17,324; Snow Steam Pump Works, Buffalo, N. Y., \$12,795; Fred M. Prescott Steam Pump Co., Milwaukee, Wis., \$13,800; Nordberg Manufacturing Co., Milwaukee, Wis., \$15,700; Epping Carpenter Co., Pittsburgh, \$14,555; the Murry Iron Works Co., Burlington, Ia., \$19,600; Allis-Chalmers Co., Milwaukee, Wis., \$16,950.

Moose Jaw, Sask., Can.—For constructing reinforced concrete reservoir of 2,000,000-gal. capacity, to Moose Jaw Construction Co., Ltd., at \$34,352.

LIGHTING AND POWER

Macon, Ga.—City Council of Macon has granted Georgia Power Co., with headquarters in Atlanta, franchise to erect electrical system in Macon in competition with Central Georgia Power Co., of which W. J. Massee is president.

Coatesville, Ind.—Plans for installing electric lighting plant for this city have been perfected.

Indianapolis, Ind.—Permits to lay approximately 22,000 ft. of gas main extensions have been granted to Indianapolis Gas Co., by Board of Public Works.

Bennett, Ia.—Installation of electric lighting is being considered by Council.

Charles City, Ia.—Special election will be held for voting on \$25,000 bond issue for construction of municipal lighting and pumping plant.

Orange City, Ia.—T. W. Michel has been granted electric light franchise.

Williamsburg, Ia.—Franchise has been granted Troy Canning Co. to install electric light plant.

Cokato, Minn.—Glencoe Electric Light Co. has been granted franchise.

Lake Crystal, Minn.—Franchise has been granted for street lighting to Consumers Power Co., of Mankato.

Marne, Minn.—Installation of electric light plant is being discussed.

Kearney, Neb.—Plans have been prepared by Oscar Claussen Engineering Co. for electric light plant, to cost about \$40,000.

Camden, N. J.—City Council at special meeting authorized sale of \$300,000 worth of bonds for purpose of establishing municipal electric light plant. There was no opposition to establishment of such plant.

Cleveland, O.—New obstacle will prevent immediate start on proposed \$2,000,000 municipal electric lighting plant. Bids received on aqueduct to be extended to plant are all higher than estimated cost and Council allowance of \$20,000. For this reason unless bids are rejected and new advertisement brings prices below the estimate, Council will be asked for additional funds.

Ebensburg, Pa.—Cambria Township Light, Heat & Power Co., which operates plant at Nanty-Glo under name of Jackson Light, Heat & Power Co., has been granted franchise by Ebensburg Council, thereby securing permission to erect poles, string wires and run heat pipes and all other necessary fixtures throughout Ebensburg. Franchise was granted by unanimous vote of members present.

Sharon, Pa.—Election will be held by the electors of the Borough of Sharon, on Tuesday, May 21, for purpose of voting for or against increase of bonded indebtedness in sum of \$85,000, for purchase and installation of electric light plant. Ralph L. Robinson, Chief Burgess.

Portsmouth, Va.—Finance and Light Committee of Council have received from Virginia Railway and Power Co. proposition for lighting of High st. as "White Way," which will make cost of lights \$1,120 per annum.

New York, N. Y.—Bids have been opened by Board of Water Supply, 165 Broadway, New York City (Chas. Strauss, Pres.) for Contract 61, constructing Walkkill blow-off, including about 7,000 ft. of concrete conduit, 7 ft. inside diameter; about 80 ft. of cut-and-cover aqueduct, blow-off chamber and necessary castings for valve and aqueduct connections—(a) Harrison & Bolce, 220 Broadway, New York City (awarded contract); (b) King-Ganey Contr. Co., 2 Rector St., New York City; (c) Martin Murray & Co., Troy; (d) T. A. Gillespie Co., 50 Church St., New York City; (e) Century Contr. Co., 115 Broadway, New York City; (f) Henry E. Fox, 81 E. 125th St., New York City; (g) Snare & Triest Co., 143 Liberty St., New York City; (h) J. F. Cogan Co., 280 Broadway, New York City; (i) Degnon Contr. Co., 60 Wall St., New York City; (j) Donlon Contr. Co., 84 Broadway, Brooklyn; (k) average bid:

| | a | b | c | d | e | f | g | h | i | j | k |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|
| 9,500 cu. yds. removal of soil | \$0.50 | \$0.50 | \$0.50 | \$0.60 | \$0.45 | \$0.70 | \$0.60 | \$0.75 | \$0.60 | \$0.50 | \$0.57 |
| 1,700 cu. yds. earth excav. in blow-off chamber | 2.00 | 1.25 | 3.00 | 1.50 | 1.88 | 6.50 | 2.00 | 2.00 | 1.00 | 2.30 | 2.343 |
| 45,000 cu. yds. earth excav. not included in above. | .60 | .55 | .60 | .60 | .66 | .70 | .85 | 1.00 | .60 | 1.30 | .746 |
| 4,000 cu. yds. rock excav. | 1.75 | 4.00 | 2.50 | 2.00 | 2.21 | 1.50 | 2.50 | 2.00 | 3.00 | 2.50 | 2.396 |
| 44,000 cu. yds. refilling and embankment | .35 | .35 | .50 | .40 | .31 | .40 | .50 | .45 | .40 | .44 | .41 |
| 8,000 cu. yds. surface dressing and grassing | .60 | .75 | .49 | .40 | .55 | .70 | .60 | .80 | .40 | .50 | .579 |
| 8,000 cu. yds. concrete for misc. structures | 6.75 | 6.35 | 6.00 | 8.00 | 8.25 | 7.00 | 7.50 | 8.50 | 10.00 | 8.00 | 7.635 |
| 1,400 cu. yds. concrete for main aqueduct, etc. | 10.00 | 6.20 | 6.21 | 12.00 | 7.55 | 9.50 | 8.50 | 7.50 | 10.00 | 7.00 | 8.446 |
| 30 cu. yds. reinforced concrete in chamber | 15.00 | 18.00 | 20.00 | 30.00 | 20.00 | 15.00 | 12.00 | 15.00 | 20.00 | 12.00 | 17.70 |
| 16,000 bbls. Portland cement. | 1.30 | 1.45 | 1.43 | 1.40 | 1.45 | 1.40 | 1.70 | 1.65 | 1.50 | 1.70 | 1.498 |
| 50 cu. yds. paving | 2.50 | 2.50 | 3.00 | 3.00 | 2.27 | 2.00 | 4.00 | 4.00 | 3.00 | 4.00 | 3.027 |
| 450 cu. yds. sand, gravel and broken stone | 2.00 | 2.25 | 3.00 | 2.00 | 1.88 | 2.00 | 2.50 | 2.50 | 1.20 | 2.25 | 2.158 |
| 125,000 lbs. caring for and setting metal-work | .01 | .01 | .02 | .02 | .01 | .02 | .02 | .02 | .03 | .02 | .018 |
| 9 tons cast iron pipe and special pipe castings | 72.00 | 50.00 | 75.00 | 45.00 | 50.00 | 100.00 | 70.00 | 90.00 | 60.00 | 100.00 | 71.20 |
| 1,000 lin. ft. tile pipe | .50 | .40 | 1.00 | .40 | .47 | .50 | .70 | 1.00 | .25 | .60 | .582 |
| 180,000 ft. timber and lumber | 50.00 | 60.00 | 50.00 | 45.00 | 55.00 | 45.00 | 70.00 | 50.00 | 50.00 | 60.00 | 53.50 |
| 500 ft. fences and guard-rails | .50 | .35 | .25 | .50 | .42 | .50 | .40 | .30 | .25 | .50 | .397 |
| 320,000 lbs. steel for reinforcing concrete | .04 | .04 | .035 | .03 | .05 | .04 | .035 | .05 | .04 | .04 | .04 |
| 3,500 lbs. misc. cast iron, wrought iron and steel | .08 | .67 | .06 | .10 | .06 | .08 | .06 | .10 | .05 | .08 | .074 |
| 1,000 lbs. galvanizing | .05 | .05 | .25 | .10 | .04 | .03 | .04 | .05 | .03 | .06 | .07 |
| 2,500 lbs. bronze | .60 | .50 | .60 | .50 | .42 | .80 | .70 | .60 | .50 | .30 | .602 |
| Crossing tracks of Walkkill Valley Railroad (lump sum) | 2,000.00 | 1,000.00 | 3,000.00 | 1,000.00 | 2,000.00 | 1,050.00 | 4,000.00 | 1,000.00 | 10,000.00 | 1,000.00 | 2,605.00 |
| Cleaning up (lump sum) | 1,250.00 | 1,500.00 | 1,000.00 | 1,500.00 | 1,000.00 | 1.00 | 1,000.00 | 500.00 | 10,000.00 | 1,000.00 | 1,875.10 |
| Totals | \$182,153 | \$183,302 | \$184,904 | \$194,655 | \$197,960 | \$199,961 | \$219,765 | \$229,260 | \$234,410 | \$235,282 | |

CONTRACT AWARDED

Michigan City, Ind.—For installing boulevard lighting system in Franklin st., consisting of 117 light posts and about 8,000 ft. of underground wiring, to W. E. Sheeler, of Michigan City, for \$9,256.

Highlands, N. J.—Electrician A. B. Hubbs, of this place, has been awarded contract to install several arches in various parts of town to add more light to town during summer months. Each arch will have 40 lights and in center will have large 500 watt light.

Hamilton, Ont.—For 6,500 concrete poles, to Hancock Bros., 35 Locomotive st., for about \$33,000. Wood forms to be used.

FIRE EQUIPMENT

Los Angeles, Cal.—Installation of extensive fire alarm and telegraph system is being contemplated.

San Francisco, Cal.—Supervisors have decided to sell \$1,000,000 worth of fire protection, school and sewer bonds on July 1.

Evansville, Ind.—Special appropriation has been asked of Evansville City Council with which to buy auto police patrol and fire wagon.

Augusta, Me.—Purchase of 1,000 ft. of fire hose has been authorized for Fire Department.

Winchester, Mass.—Purchase of motor apparatus is being discussed.

Dowagiac, Mich.—City is considering purchase of auto fire truck.

Buhl, Minn.—Fire alarm system will be installed.

Red wing, Minn.—City has authorized purchase of 1,200 ft. of fire hose.

St. Louis, Mo.—Bonds in sum of \$50,000 have been voted for purchase of sites and erection of new fire stations.

Port Jervis, N. Y.—City will probably purchase 500 ft. of new fire hose.

Niagara Falls, N. Y.—Bids will shortly be called for erection of new fire hall in Third st. and one in Highland ave.; estimated cost, \$15,000 and \$8,000, respectively.

Yonkers, N. Y.—Installation of new fire alarm apparatus is being urged.

Yonkers, N. Y.—Commissioner of Public Safety Fleming has urged Common Council to provide motor cars for Fire Chief and his two assistants.

Cleveland, O.—Bids will be received by City Auditor until 12 noon, May 10, for purchase of \$40,000 Fire Department coupon bonds. Thomas Coughlin, City Auditor.

Columbus, O.—Erection of two new engine houses and motorization of entire department is recommended.

Gallon, O.—Purchase of motor fire truck is being considered.

Patton, Pa.—Patton Fire Co. has decided to ask for bids on construction of two-story brick building to be erected at Fourth and Magee aves.

West Middlesex, Pa.—Purchase of 500 ft. of fire hose has been authorized.

Nashville, Tenn.—Bill providing for appropriation of \$25,000 for purchase of three combination motor fire engines for Nashville Fire Department was passed on first reading and referred to Finance Committee of City Council.

Rutland, Vt.—City is considering purchase of combination chemical and hose wagon.

Walla Walla, Wash.—Purchase of new equipment is being considered.

Milwaukee, Wis.—Resolution is being considered for purchase of six automobiles for assistant fire chiefs.

CONTRACT AWARDED

East Chicago, Ind.—By City, to Bi-Lateral Fire Hose Co., of Chicago, for 2,000 ft. of fire hose.

Shreveport, La.—By City Council, for construction of three brick fire stations to be located in residential sections and to cost aggregate of \$13,693, to Garson Brothers, P. Martineau and Tom Green, local contractors. This money was secured from a \$50,000 bond issue.

Perth Amboy, N. J.—To Combination Ladder Co., of Providence, R. I., for furnishing this city with hook and ladder truck, at \$1,132.

Toledo, O.—For automobile for Chief W. Mayo, to A. A. Atwood, agent for Overland machine, at price of \$1,300.

Woonsocket, R. I.—By City Council Committee on Fire Department, to Contractor John F. Fleurant, for building new first station in Social district.

Charleston, S. C.—To Seagrave Co., of Columbus, O., for an 80 horsepower combination auto engine.

Port Arthur, Can.—For installation of 50-box fire alarm system, to Northern Electric Co., at \$10,343.

BRIDGES

Redding, Cal.—Board of City Trustees as Committee of the Whole, reinforced by committees from Citizens' League and Chamber of Commerce, met with Board of Supervisors and urged need of building, or agreeing to build, bridge across Sacramento at northern end of Market st., this to insure State's \$18,000,000 highway coming through Redding. It is proposed that city and county join in building bridge, which will cost upwards of \$40,000, according to rough estimate.

Wilmington, Del.—Levy Court will not accept any of bids opened for construction of bridge across Christiana River, to replace present Third st. structure. Lowest aggregate proposal to build bridge and sub-structure amounts to \$211,000, or just \$61,000 more than County Commissioners are empowered to expend. New bids will probably be advertised for.

Rock Rapids, Ia.—Auditor of Lyon County has secured plans and specifications for county bridges from engineers at Ames, Iowa, and by order of Board of Supervisors has advertised for bids.

Long Branch, N. J.—Lowest bid received for construction of new bridge over Takanasee Lake was received from Jesse A. Howland, of Sea Bright. His estimate for Stimson plan was \$31,000. He also submitted two of his own plans, one for \$33,000; the other \$24,200. Other bids were as follows: The American Concrete & Steel Co., Newark, bid \$37,758. Their own plan structure called for \$39,850. Nelson Meredith & Co., Chambersburg, Va., Stimson plan, \$32,272; own plan, \$24,950. United Construction Co., Albany, N. Y., Stimson plan, \$47,900. Two other plans, \$40,590 and \$48,900. S. W. Schwieters, Jr. & Co., New York, Stimson plan, \$33,500. Other bids \$35,000 and \$33,500. Ocean Construction Co., H. B. Pitcher, two of his own plans, \$29,655 and \$25,095. Snarl, Triest Co., New York, Stimson plan, \$44,480. Own plans, \$45,200 and \$36,850.

Dayton, O.—Resolution has been introduced by Councilman Kuntz at instigation of members of North Dayton Improvement Association, providing for issuance of bonds in sum of \$15,000 for purpose of enabling construction of concrete bridge over Mad River at Keowee st.

Altoun, Pa.—County Commissioners have asked for bids for four concrete bridges for as many townships in Blair County. First structure will be located in North Woodbury Township; second at Eldorado, in Logan Township; third at Ironville, Snyder Township, and fourth in Canoe Valley, Frankstown Township.

Ebensburg, Pa.—County Commissioners have agreed to pay five-thirteenths of actual cost of constructing highway bridge between 14th and 16th Wards of city of Johnstown, cost to county not to exceed \$25,000.

Philadelphia, Pa.—Ordinance is being considered asking for construction of bridge on 13th st.

Beeville, Tex.—Bee County Commissioners have received bids for building of five bridges. Bid of \$13,143 for all five was accepted. Three of bridges will be on San Antonio-to-coast highway, one on Beeville-Goliad rd. and one on Pettus-Mineral rd. All are to be of steel.

Ashland, Wis.—Sum of \$50,000 will be spent by Bayfield County Board on bridges and roads.

Marquette, Wis.—Total of \$5,100 will be spent in county towns this summer for new bridges.

Niagara Falls, Ont.—Lincoln County will pay part of cost of steel bridge over Welland River, on town line between Wainfleet and Caistor Townships. Welland County Council decided to accept bid of Hamilton Bridge Co., at \$5,400.

CONTRACTS AWARDED

Pasadena, Cal.—To Mercereau Bridge & Construction Co., Los Angeles, at \$187,700, for construction of bridge to span Arroyo Seco River at Colorado st.

San Bernardino, Cal.—To Joliet Bridge & Iron Co., at \$11,620, for erecting steel highway bridge over Mojave River, near Oro Grande. New bridge will have a span of 250 ft. Other bids were: Mesmer & Rice, \$13,879; Union Iron Works, \$12,378; Charles W. Corbaley, \$14,770; Security Construction Co., \$14,759; Putnam Stone Co., \$13,482; Mervy Elwell Co., \$13,262; Russell-Foell-Greene Co., \$12,850; Charles Lefer, \$15,200.

Boise, Idaho—For construction of 10 new steel and concrete bridges over various rivers, creeks and irrigation canals in Ada County, by County Commissioners, to Missouri Valley Bridge Co., for \$25,995.

Pecatonica, Ill.—To W. H. Shons, Freeport, Ill., at \$12,281, for construction of bridge across Pecatonica River, at Pecatonica.

Pekin, Ill.—By Bridge Committee of Tazewell County and the Highway Commissioners of Sand Prairie, to Burnham & Ives, Bloomington, Ill., at \$3,349, for construction of a bridge in San Prairie Township.

Haysville, Ind.—By Board of Commissioners of Jasper County, to Vincennes Bridge Co., Vincennes, Ind., for construction of bridge across White River at Haysville.

Battle Creek, Mich.—To Johnson Engineering & Construction Co., for construction of 120-ft. span bridge over Kalamazoo River at Carlisle st.

Plainfield, N. J.—To Ferro Bridge Co., of Harrisburg, Pa., for constructing bridge over Stony Brook at West End ave., to cost \$6,925.

Trenton, N. J.—To Newton A. K. Bugbee, for making repairs to bridge across the Delaware at Calhoun st., at \$20,000.

Albany, N. Y.—By Superintendent of Public Works, to Skene & Richmond, Louisa, Ky., at \$258,710, for construction of five lift bridges.

Chillicothe, O.—By Board of Commissioners of Ross County, for bridge at Paint st., as follows: Sub-structure, S. Renick, Findlay, O., \$3,396; flooring, Capitol Construction Co., Columbus, O., \$5,200.

Collinsville, O.—By County, for new bridge at Collinsville, to Capital Construction Co., at bid of \$4,300, and contract for sub-structure, to John Conrad, at bid of \$2,635.

Bradford, Pa.—To Thomas Callahan, 4 S. Bennett st., for construction of reinforced concrete bridge, 20-ft. span.

Chester, Pa.—By County Commissioners, for rebuilding of bridge crossing Chrome Run, near Rockdale, in Middletown Township, to Skelley & Proctor, of Delaware County, at \$957.50.

Monessen, Pa.—To Nicola Building Co., Farmers' Bank Bldg., Pittsburgh, at \$51,000, for construction of steel and concrete bridge, at Monessen.

Reading, Pa.—Contracts for three county bridges, construction of which will amount to more than \$10,000, have been awarded by County Commissioners. Nelson-Meredith Co., of Chambersburg, was successful bidder on two jobs, Little Oley bridge, in Douglass Township, and for Centreport bridge, in Centre Township. Company's bid on Little Oley bridge was \$2,024, with \$1 a cu. yd. for excavating and \$3 a cu. yd. for masonry. On Centreport bridge its bid was \$2,154; masonry, \$4, and excavating, 70 cts. per cu. yd. Brown-King Construction Co., of Philadelphia, was successful bidder for largest of three bridges, Monocacy bridge, in Amity Township. Its bid was \$4,600; masonry, \$5.50, and excavating, 75 cts. per cu. yd. All of bridges are to be of reinforced concrete construction. It will be noticed in bids which follow that contract was not awarded in each instance to lowest bidder on whole, but in figuring excavating and masonry contract as awarded are to lowest bidders. Berks Construction Co., Reading, \$2,534; Nelson-Meredith Co., Chambersburg, \$2,024; Carl R. Crump, Montrose, \$1,960; Jas. R. Bennyhoff, E. Mauch Chunk, \$2,100; Ferro Concrete Co., Harrisburg, \$2,219; Reading Construction Co., \$2,360; Brown-King Constr. Co., Philadelphia, \$2,210; G. A. & F. M. Wagman, Dallastown, \$3,000; Berks Construction Co., Reading, \$5,712; Nelson-Meredith Construction Co., Chambersburg, \$4,596; Carl R. Camp, Montrose, \$4,553; James Bennyhoff, East Mauch Chunk, \$3,500; L. H. Focht & Son, Reading, \$5,300; Ferro Concrete Co., Harrisburg, \$4,995; Reading Construction Co., \$4,600; Brown-King Construction Co., Philadelphia, \$4,009; Berks Construction Co., Reading, \$2,414; Nelson-Meredith Co., \$2,154; Carl Camp, Montrose, \$2,125; James B. Bennyhoff, East Mauch Chunk, \$2,400; Concrete Co., Harrisburg, \$2,345; Reading Construction Co., \$2,380; Brown-King Construction Co., \$2,103; G. A. & F. M. Wagman, Dallastown, \$2,300.

Mt. Vernon, Wash.—By Highway Commissioner, Olympia, for super-structure of Skagit River bridge, near Mt. Vernon, to Gerrick & Gerrick Co., of Seattle, for \$34,673.

Woodland, Wash.—By Highway Commissioner, Olympia, for super-structure and approach of Lewis River bridge, near Woodland, to Washington Engineering Co., of Tacoma, for \$37,500.

MISCELLANEOUS

Bessemer, Ala.—Mass meeting of citizens of Bessemer and this end of Jefferson County has been held at Board of

Trade Rooms for purpose of discussing proposed bond issue for million dollar court house and jail in Birmingham.

Pasadena, Cal.—City Clerk has been instructed to advertise for bids for construction of incinerator plant with capacity of 90 tons and also for one of 45 tons.

San Francisco, Cal.—Supervisors have agreed to sell \$2,640,000 worth of city hall bonds and \$1,000,000 of exposition bonds on July 1. Total city hall and civic center issue is \$8,800,000. Board has also decided to sell \$1,000,000 worth of school, fire protection and sewer bonds on same date.

Denver, Col.—People will have opportunity May 21 at general city election of voting on mountain parks and playgrounds propositions.

Wilmington, Del.—Mayor Howell has refused to sign garbage collection contracts awarded by Board of Health which retired few days ago. Contracts were given to highest bidder, being \$18,000 above lowest.

Atlanta, Ga.—Finance Committee of Council has agreed to stand behind Board of Health in securing expert engineer to pass on practicability of plans and specifications for erection of crematory.

Muncie, Ind.—Ordinance has been passed appropriating money for purchase of automobile.

Waterloo, Ind.—Town Council at special adjourned session voted to repair town hall at its present location, at corner of Van Vlucck and Sheridan sts.

Newark, N. J.—Committee has decided to ask Finance Committee for appropriation to defray expenses of preliminary plans for proposed new market.

Le Roy, N. Y.—Proposition to raise \$15,000 to erect town and village building, which came up for vote of taxpayers of village has been carried by one vote.

Cincinnati, O.—City Auditor Washburn is offering for sale \$250,000 new hospital bonds.

Cleveland, O.—Contract to construct superstructure of new \$2,600,000 city hall building will not be let before latter part of June. Revised specifications have been received by W. S. Lougee, superintendent of construction, from Architect J. Milton Dyer, but first advertisements will not be inserted before middle of next week and will run six weeks.

Cleveland, O.—Bids will be received by City Auditor until 12 noon, May 10, for purchase of \$350,000 park coupon bonds; \$725,000 infirmary and hospital coupon bonds; \$75,000 house of correction coupon bonds; \$25,000 farm school coupon bonds; \$25,000 market house coupon bonds, and \$30,000 police department coupon bonds. Thomas Coughlin, City Auditor.

Marshall, Tex.—City Commission has instructed City Attorney to write ordinance to hold bond election for proposed abattoir and macadamizing residence streets.

Superior, Wis.—City Commission is planning to erect crematory shortly.

CONTRACTS AWARDED

San Francisco, Cal.—By State Harbor Board, for construction of piers 30 and 32, to Robert Wakefield Co., of Portland, Ore., at \$975,981, lowest bid on suspended fender-line type.

Wilmington, Del.—By Democratic Board of Health, for removal of garbage as follows: First district, William J. Winchester, \$6,480. Second district, Martin F. Keogh, \$16,400. Third district, James Lehane, \$15,500. Fourth district, Daniel McCormick, \$28,800. Contractors are to use Holzboog sanitary carts and Contractor Keogh will use seven carts on his district instead of five as heretofore. In Third district Charles H. Colburn bid \$11,069, but contract was given to Lehane at \$15,500. In Second district, A. G. B. Anderson bid \$11,700, against Keogh's \$16,400, but latter was given contract. In Fourth district Thompson & Colburn bid \$19,114, but Daniel McCormick got the contract at \$28,800. By awards Board will pay \$17,757 more under contracts as awarded than if contracts had been given to lowest bidders.

Marshalltown, Ia.—By City Council, to Kissel Kar Co., for motor truck, costing \$4,950.

Passaic, N. J.—By Director of Public Safety, for furnishing combination police patrol and ambulance (Cadillac), to Geo. D. W. Brown, at \$2,500.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

| STATE | CITY | RECEIVED UNTIL | NATURE OF WORK. | ADDRESS INQUIRIES TO |
|----------------------------|-------------------|----------------------|--|--|
| STREET IMPROVEMENTS | | | | |
| Michigan..... | Essexville..... | May 13, 7.30 p.m.... | Constrn. sidewalks for 1912..... | Mars Guindon, Vil. Clk. |
| New Jersey.... | Atlantic City.... | May 13, 8 p.m..... | Constrn. roads with bitulithic, asphalt or bit. macad. pav't. | Frank B. Mount, City Engr.; City Council. |
| Ohio..... | Delaware..... | May 13, noon..... | Constrn. water-bound macad. road, 8,863 ft. long, 16 ft. wide; est. cost, \$7,386..... | J. R. Marker, State Highway Comr., Columbus, O. |
| New York.... | Long Island City. | May 14, 11 a.m.... | Regulat. and repav. with asphaltic concrete. 8 contracts... | M. E. Connolly, Boro. Pres. |
| New York.... | New York..... | May 15, 2 p.m..... | Regulat. & repav. wood block pav't on concrete foundation; also asph. blk & sheet asph. on conc. found.; 15 contracts. | G. McAneny, Boro. Pres. |
| Alabama..... | Mobile..... | May 16..... | Constrn. road with gravel and churt..... | C. L. Strange, County Engr. |
| Oregon..... | Eugene..... | May 16..... | Constrn. 27,577 lin. ft. of macadam road..... | Stacy M. Russell, County Clk. |
| Ohio..... | Carrollton..... | May 17, noon..... | Gradg. and pavg. with brick 2.37 miles roads..... | J. R. Marker, State Highway Comr. |
| West Virginia. | New Cumberland. | May 18, noon..... | Gradg. and pavg. 10 miles of road..... | Clerk County Court. |
| Wisconsin.... | Superior..... | May 20, 10 a.m.... | Pavg. Tower avenue..... | City Clerk. |
| North Carolina | Rocky Mount.... | May 20, noon..... | Constrn. 20,000 sq. yds. granolithic sidewalk pav'ts and 20,000 ft. concrete curbing..... | J. B. Ramsey, Mayor. |
| Texas..... | Paris..... | May 21..... | Constrn. road..... | W. S. Gill, Sec'y Road Comrs. |
| Washington... | Seattle..... | May 21, 2 p.m.... | Constrn. highways..... | Board County Commissioners. |
| Ohio..... | Warren..... | May 24, noon..... | Constrn. 2.69 miles highway with bituminated concrete; est. cost, \$18,471.98..... | J. R. Marker, State Highway Comr. |
| Minnesota.... | Hastings..... | May 27, 10 a.m.... | Gradg. road..... | T. A. Hoffman, County Aud. |
| Pennsylvania. | Harrisburg..... | May 28, 10 a.m.... | Constrn. 24,603.5 ft. asphaltic concrete road 16 ft. wide..... | E. H. Bigelow, State Highway Comr. |
| Ohio..... | Cincinnati..... | May 31, noon..... | Oiling several roads..... | Stanley Struble, Pres. Bd. Co. Com. |
| SEWERAGE | | | | |
| New York.... | Long Island City. | May 14, 11 a.m.... | Constrn. 3 sewers..... | M. E. Connolly, Boro. Pres. |
| WATER SUPPLY | | | | |
| Missouri..... | Webster Groves.. | May 18, 6 p.m.... | Taking up 11,780 ft. 2 to 4-in. galvanized iron pipe and laying 131,500 ft. 2, 4, 6 and 8-in. galvanized iron pipe; setting 102 fire hydrants, twenty-six 6-in., ninety-three 4-in. and 117 2-in. valves and boxes; furn. c. i. pipe and 49,000 lbs. special castings..... | City Clerk; Fuller-Coult Co., Chemical Bldg., St. Louis, Mo. |
| FIRE EQUIPMENT | | | | |
| New York.... | New York..... | May 14, 2 p.m.... | Furn. 2,400 ft. 2½-in. rubber fire hose..... | Geo. McAneny, Boro. Pres. |
| BRIDGES | | | | |
| Ohio..... | Cincinnati..... | May 10, noon..... | Constrn. concrete bridge..... | Stanley Struble, Pres. |
| Alabama..... | Mobile..... | May 16..... | Constrn. concrete bridge and culvert work..... | C. L. Strange, County Engr. |
| MISCELLANEOUS | | | | |
| Florida..... | Lakeland..... | May 20, 3 p.m.... | Constrn. municipal building..... | Board Bond Trustees. |

STREET IMPROVEMENTS

Wilmington, Del.—Mayor Howell has returned to Council with his approval ordinance providing for bond issue of \$100,000 to pay for widening 11th st. between Market and Orange sts. and providing for special fund of \$50,000 for use of the Street and Sewer Department in extending sewer system.

Pontiac, Ill.—Construction of 29 blocks of brick paving on concrete base is being considered. T. B. Knight is City Engineer.

Burlington, Ia.—City Council has passed ordinance establishing grade of Lewis st. and grade of Remey ave. Frank C. Norton is Mayor, and Robert Kroppach is City Clerk.

Council Bluffs, Ia.—Resolution has

been passed for paving and improving various streets.

Lexington, Ky.—Resolutions have been passed providing for improvement of portions of Mill and Third sts.

Lowell, Mass.—Council has voted \$87,000 for street paving.

Lowell, Mass.—Engineer Kearney said that cost of paving Church st., from Central st. to Concord st., would be \$24,000. Area is 5,359 sq. yds., each yard to cost \$3.15. Another estimate submitted was for paving of East Merrimack st., from Fayette st. to High st. Estimated cost was \$5,800.

Lowell, Mass.—It has been voted to pave Gorham st., from West Union to Elm st., a pitcher filler to be used and sum named was \$10,000. It has also

been voted that Bridge st., from Central bridge to Third st., be paved with granite blocks on granite base. Estimated cost was \$13,600; also to expend \$4,900 for repaving Lawrence st., from Watson st. to the bridge, and to pave Aiken st. \$4,600 was voted.

St. Joseph, Mo.—Ordinances have been passed for improvement of various streets.

Ventnor City, N. J.—By majority of four in special election, Ventnor City registered approval of bond issue of \$25,000, proceeds of sale of which are to be used for improvements to crosstown streets.

Fulton, N. Y.—City Clerk Harrington has been authorized to advertise for hearing on proposed pavement for West

Third st., between West Broadway and Center st.

Syracuse, N. Y.—Six contracts for construction of about 28 miles of State and State and county highways in this county at estimated cost of more than \$355,000, will be advertised shortly, according to statements of State Superintendent Duncan W. Peck. Of six contracts, upwards of 7½ miles will be built as State and County road on what is known as Syracuse-Bridgeport highway. Estimated cost is \$85,087.76. Two sections are on road from Liverpool to Baldwinsville, which originally were to be one route of about 7½ miles. One section runs from Baldwinsville to Cold Spring bridge over the Seneca River below Mud Lock. Cost is placed at \$46,007.77. Other section runs from Cold Spring bridge to Liverpool, and is estimated to cost \$53,242.86. Largest estimate is for Marietta-Marcus Valley road, which is placed at \$99,572.76. Distance is about 8 miles, and road will connect roads already improved. Another contract is for section of State trunk line from Syracuse to Watertown, between Cicero and Brewerton. This is to north of Cicero plank road terminus and is about 5 miles in length. Estimated cost is \$69,225.65. Other section is fraction of mile in village of Elbridge, extending improved highway. Estimated cost is \$2,549.95.

Eugene, Ore.—Recorder has been directed to advertise for bids for sweeping and sprinkling of streets.

Eugene, Ore.—Committee has recommended paving of East Fifth, from Willamette to High; West Ninth, from Lincoln to Jefferson; Willamette, from 13th to driveway leading to General Hospital and East Eighth st., from mill race to Southern Pacific crossing.

Boswell, Pa.—Boswell Board of Trade has taken steps to secure State aid in improving of road between Boswell and Jenners. Cost to borough would be only about \$1,000.

Erie, Pa.—Ordinances have been passed authorizing paving of various streets.

Franklin, Pa.—By approval of plans of State Highway Commissioner Edward M. Bigelow construction of extension of splendid brick pavements through Sugar-creek Township to Jackson Township line, within two miles of Cooperstown, is assured.

Newport, R. I.—Governor Pothier has signed resolution appropriating \$250,000 for maintenance, construction and repair of State highways. This money is to be spent by State Board of Public Roads. In addition to this amount, Board has expending of \$600,000 raised by bond issue which people ratified last fall.

Woonsocket, R. I.—Common Council has concurred in resolution recently passed by Board of Aldermen appropriating \$4,000 for oiling main approaches to city.

Taylor, Tex.—Election held on question of bond issue for paving of Taylor's business section carried by vote of over eight to one.

Stafford, Va.—Bond issue of \$100,000 for road construction has been authorized.

Tacoma, Wash.—Installation of asphalt paving plant is contemplated.

Superior, Wis.—City Engineer E. B. Banks and his assistants have completed specifications for paving of Tower ave. Plans for the work are now being prepared and as soon as completed will be submitted to City Commission for approval. Then bids will be called for.

CONTRACTS AWARDED

Aurora, Ill.—For paving seven east side streets, to McCarthy Improvement Co., Davenport, Ia.

Canton, Ill.—By City, for paving Olive st., to Heckard & Sons, Canton, Ill.

Peoria, Ill.—By City, for paving one block on Ave. C, to R. A. Savill, Peoria, Ill.; and for paving Olive st., from Main st. to Ave. C, to Heckard & Sons, Peoria, Ill.

Rantoul, Ill.—By City, for paving Sangamon ave., to Finley & Lewis, Hooperston, Ill.

Lexington, Ky.—To Carey-Reed Co., for reconstruction of South Limestone, from Winslow to Virginia ave., construction of granite curb on Vine st., from Limestone to Merino, and for furnishing and spreading oil on macadam streets.

Shreveport, La.—By City, for paving Cedar and Laurel sts., to Southern Bitulithic Co.

Baltimore, Md.—To Warner-Quinlan Asphalt Co., of this city, three paving contracts in Baltimore, Md., totalling \$190,000.

Syracuse, N. Y.—For laying concrete foundation for pavement in South Clinton st., from West Jefferson to West

Onondago st., to Warner-Quinlan Asphalt Co., at \$1,921.50, lowest bid submitted to Intercepting Sewer Board.

Dayton, O.—To William Turner, for sprinkling of about 40 paved streets about city.

Youngstown, O.—By City, for paving contracts, as follows: Grading Steel st., to A. O'Horo; paving Salt Spring st., to Andrew Serafino.

Temple, Tex.—By City, for constructing vitrified brick pavement on Adams ave., to Ockander Bros., Waco, Tex.

Olympia, Wash.—For paving East Fourth st. with asphalt, to W. A. Weller, Olympia, Wash., \$32,471.

Seattle, Wash.—By City, for following road improvement: Replanking Railroad ave., to J. A. McEathern Co., Bailey Bldg., Seattle, Wash., \$22,970; grading 42d ave. south, to Marx, Russell & Gallagher, Bailey Bldg., Seattle, Wash., \$15,210.

Seattle, Wash.—By City, for following sidewalk contracts: North 82d st., concrete walk, D. H. Traphagen, \$8,372; N. 80th st., concrete walk, to the same, \$10,903.

Walla Walla, Wash.—For constructing road, to John Hoffman, Walla Walla, Wash., at \$7,714.

SEWERAGE

Decatur, Ga.—Bond issue of \$5,000 has been voted for sewer construction.

Lexington, Ky.—Resolutions have been passed providing for construction of sanitary sewers on portions of Merino, Georgetown sts. and Rand ave.

Lowell, Mass.—Bids for purchase of \$50,000 4 per cent. coupon sewer bonds have been received by James E. Donnelly, Commission of Finance and issue has been awarded Blake Bros. & Co., Boston brokers.

Warrensburg, Mo.—Bond issue of \$40,000 has been voted for sewer construction.

Trenton, N. J.—Ordinances have been passed for construction of sewers in various streets.

Erie, Pa.—Ordinances have been passed authorizing construction of sewers in various streets.

Spokane, Wash.—Plans and estimates have been prepared by City Engineer McCarty for intercepting sewer, to cost \$215,000.

CONTRACTS AWARDED

Anaheim, Cal.—By City, for constructing section 1 of outfall sewer, to Williamson & Chamberlain, Anaheim, Cal.

Des Moines, Ia.—For constructing Greenwood Park sewer, to J. W. Turner Improvement Co., \$23,700; constructing 44th and Center sts. sewer system, to T. J. Casselbury, \$1,118.

Atchison, Kan.—To H. B. Kerr, Oklahoma, Okla., for construction of pipe sewers in Sewer District No. 6. Victor L. King is City Clerk.

Kansas City, Mo.—By Board of Public Works, for constructing sewers, to R. J. & W. M. Boyd, Fred Larimer and Kinle Bros.

Holdrege, Neb.—To Geo. H. Rugg, for construction of 1,295 ft. of 8-in. sewer, three manholes and one flush tank.

Fulton, N. Y.—By Board of Public Works, sewer contract, to Tony Debarber and Peter Massaro, for \$4,945.73. There were eight other bidders. Successful bid was \$243.95 lower than next highest, figure of Ovid Taft, \$5,189.68.

Milbank, S. Dak.—By City, for constructing 10,000 ft. of sewer on Thompson st., to Lars Overn, St. Peter, S. Dak.

Seattle, Wash.—For constructing sewer on 10th st. north, to Clark & Colasurdo, Seattle, Wash., \$19,577.

Fond du Lac, Wis.—For sewer construction, as follows: Scott st. sanitary sewer, to James McCabe, \$3,102; constructing storm sewer on Third st., to the same, \$174.

WATER SUPPLY

Stevenson, Ala.—Bond issue of \$14,500 for water works construction has been voted.

Gloucester, Mass.—Board of Water Commissioners have awarded \$20,000 loan for use of Water Department to E. M. Farnsworth & Co., of Boston.

Diller, Neb.—Bond issue of \$4,000 has been voted for water works improvement.

Baton, N. Mex.—A \$400,000 bond issue has been voted for water works construction.

New York City, N. Y.—Controller Prendergast has opened proposals for \$65,000,000 city bonds, of which \$20,000,000 is for water supply.

Herrietta, Tex.—Bond issue of \$18,000 has been voted for water works construction.

CONTRACTS AWARDED

Hamilton, Ill.—By Board of Local Improvements, to F. R. Stone, Lima, O., for construction of water works distribution pipe system.

Normal, Ill.—To C. C. Bowman, Bloomington, Ill., for erection of building and reservoir.

Bloomington, Ind.—By City, for constructing pumping station and furnishing pumping machinery for water works plant, to American Well Works, Chicago, Ill.

Holyoke, Mass.—By Water Commissioners, for completion of dam at White reservoir, to Daniel O'Connell & Sons.

Lancaster, O.—For furnishing 3,600 ft. of 6-in. cast iron water pipe, to United States Cast Iron Pipe & Foundry Co., Columbus, O., at \$23.35 per ton.

Carlton, Ore.—By City, for constructing complete water works system, to Jas. Kennedy Construction Co., Portland, Ore.

New Kensington, Pa.—By City, for constructing filtration plant for three boroughs, to H. S. White, New Kensington, Pa.

Nashville, Tenn.—For constructing 30-651 ft. of 6-in. water main, to William Leftwich & Co., Nashville, Tenn.

LIGHTING AND POWER

Muscataine, Ia.—Extension of ornamental lighting system on Mulberry st. is being discussed.

Johnstown, Pa.—Installation of ornamental street lighting system is proposed.

BRIDGES

Santa Barbara, Cal.—Construction of bridge across Ventura River is contemplated; estimated cost, \$60,000.

Junction City, Kan.—Construction of steel bridge, to cost \$50,000, is contemplated across Camden River.

Cleveland, O.—Construction of bridge across Nine Mile Creek, on Lake Shore blvd., is being considered.

CONTRACTS AWARDED

Terre Haute, Ind.—By City, for constructing Randall bridge, to James T. Peters, Brazil, Ind., at \$1,700.

Oswego, N. Y.—For constructing East Mohawk st. bridge over the Hydraulic Canal, to Groton Bridge Co., Groton, N. Y., at \$1,294.

Cleveland, O.—By Board of Commissioners of Cuyahoga County, for bridge work. Following were low bidders: Lake Shore blvd. bridge, Colbrunn Bros., West Park, O., \$4,380.50. Foundations for high level bridge over Cuyahoga Valley, O'Rourke Engineering & Construction Co., New York City, \$300,000.

Hamilton, O.—By City, for constructing steel bridge over Seven-Mile Creek at Collinsville, to Capital Construction Co., \$4,300; constructing concrete foundation and approaches, to John Conrad, \$2,635.

Eugene, Ore.—For constructing bridge across Willamette, to Coast Bridge Co., Portland, Ore., \$7,500.

Ebensburg, Pa.—To C. Schenkemeyer & Son, of Johnstown, by County Commissioners, to construct concrete bridge over Solomon's Run, on Von Lunen rd., Dale Borough, Johnstown. The bid was \$2,570. Other bids were as follows: B. Gigliotti, Johnstown, \$3,625.72; Polo Azzara, Barnesboro, \$2,930; Ferris Bridge Co., Pittsburgh, \$2,793; M. M. Sheesley & Co., Johnstown, \$2,645.

Olympia, Wash.—By State Highway Commission, as follows: Lewis River bridge near Woodland, to Washington Engineering Co., Tacoma, Wash., \$37,500; superstructure of Skagit River bridge near Mt. Vernon, Wash., to Derrick & Derrick Co., Seattle, Wash., \$34,673. William J. Roberts, State Highway Commissioner.

MISCELLANEOUS

CONTRACTS AWARDED

Vienna, Mo.—For steel bridge to be built across Gasconade River at Indian Ford, two miles east of Vienna, to Missouri Valley Bridge & Iron Co., at bid of \$12,985.

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